APPLICATION OF OINTMENTS

TO INTERNAL CAVITIES BY THE AID OF COLLAPSIBLE TUBES.

This method of treatment having become largely adopted, we present to the Medical profession a series of Ointments which have been thoroughly tested in the diseases indicated.

For the Urethra two kinds of Catheters are recommended:—

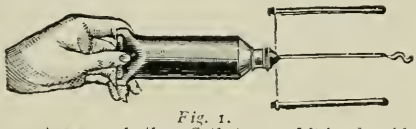


Fig. 1.

For GONORRHŒA and URETHRITIS.

1st.—For recent cases. A Stiff Vulcanite Catheter (*Fig.* 1) is preferred (with this instrument we supply three Catheters, and it is advisable that the largest that can be passed without pain be used).

For GLEET and Long-standing Cases of GONORRHŒA.

2nd.—A 9-in. "flexible" Catheter, and is intended for diseases far down the Urethra. Either of the above Catheters are supplied with Ointment Tubes containing the following medicaments:—

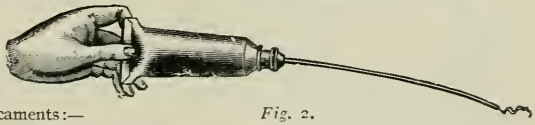


Fig. 2.

1. Iodoform & Eucalyptus
2. Do. do. and Cocaine
3. Thallin
4. Do. and Cocaine
5. Iodoform, Eucalyptus & Perchloride of Mercury
6. Dermatol
7. Aristol
8. Biniodide of Mercury
9. Hydrastin
10. Iodol and Eucalyptus
11. Sulphate of Zinc
12. Permanganate of Zinc
13. Resorcin, Hydrastin & Extract of Belladonna
14. Loretin
15. Protargol

Price complete, **5** - each; with Cocaine, **6** - each.
Ointment Tubes without Catheters, **1 6** each; with Cocaine, **2 6** each; by post, **3**d. extra.

In ordering please specify number of the Ointment Tubes, and also whether the Stiff Vulcanite Catheters or the Long Flexible Stem is required.

For DISEASES of the RECTUM.

Each Collapsible Tube is fitted with a specially designed Vulcanite Pipe.

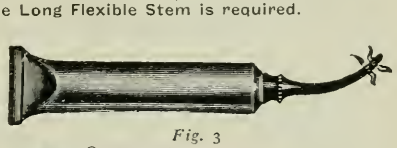


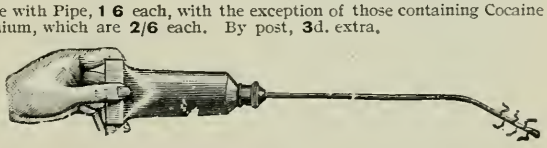
Fig. 3

WE PREPARE THE FOLLOWING OINTMENTS:

1. Boric Acid and Glycerine
2. Cocaine and Morphia
3. Ung. Gallæ c. Opio
4. Hamamelis
5. Do. and Cocaine
6. Ung. Conii
7. Ung. Belladonna
8. Chrysarobin, Iodoform, and Belladonna
9. Gallic Acid and Belladonna
10. Oxide of Zinc and Boric Acid
11. Perchloride of Iron
12. Acetate of Lead and Belladonna
13. Pilewort Ointment

All the above Tubes complete with Pipe, **1 6** each, with the exception of those containing Cocaine and Conium, which are **2/6** each. By post, **3**d. extra.

For DISEASES of the UTERUS.



The Vulcanite Stem and Ointments have been made at the suggestion of Dr. DUKE, Cheltenham.

1. Antiseptic (Iodoform)
2. Do. (Boric Acid)
3. Astringent (Tannic Acid)
4. Escharotic (Chlr. of Zinc)
5. Anodyne (Cocaine and Morphia), *useful in Cancer*

Price of Stem, with Ointment Tube of either Nos. 1, 2, 3 or 4 .. each **5s.**
,, ,, ,, No. 5 .. .. .. ,, **6s.**
Spare Collapsible Tubes of Ointment, Nos. 1, 2, 3 and 4 .. .. ,, **2s.**
,, ,, ,, No. 5 .. .. ,, **3s.**

BY POST 3D. EXTRA.

N.B.—We will be pleased to supply Tubes filled according to physicians' own formulæ.

R. SUMNER & CO. Ltd. Wholesale and Export Druggists, **LIVERPOOL.**

"ANTISEPTICINE" & its Preparations.

Registered.

"ANTISEPTICINE" in Powder, Pastilles, Tablets, Soap, Tooth Powder, Dusting Powder, Ointment, Lotion, Spray, Inhalant, Suppositories, Pessaries, Bougies, Gauze, Wool, Lint, Cotton Wool, Bandages, Calico, Flannel, Oil Silk, Rubber Sheeting, Rubber Tubing, Rubber Gloves, Rubber Bags, Rubber Syringes, Rubber Catheters, Rubber Bougies, Rubber Pessaries, Rubber Teats, Rubber Bottles, Rubber Bulbs, Rubber Rings, Rubber Cushions, Rubber Pads, Rubber Bandages, Rubber Tape, Rubber Cloth, Rubber Sheeting, Rubber Tubing, Rubber Gloves, Rubber Bags, Rubber Syringes, Rubber Catheters, Rubber Bougies, Rubber Pessaries, Rubber Teats, Rubber Bottles, Rubber Bulbs, Rubber Rings, Rubber Cushions, Rubber Pads, Rubber Bandages, Rubber Tape, Rubber Cloth.

"ANTISEPTICINE" Antiseptic Dressing for wounds, either surgical or accidental.

Internally, in Diarrhœa and Indigestion, arising from fermentation, it is invaluable, and is also strongly recommended in infectious maladies, such as Scarlet, Typhoid, and other Fevers, and, in fact, all Zymotic Diseases. As a Spray in a sick room it rapidly purifies the atmosphere.

Price 2s. 6d. per lb.

"ANTISEPTICINE" DUSTING POWDER

Registered.

Is a strong germicidal Powder for dusting fresh wounds, burns, ulcers, or any kind of suppurating surface. It is not only an Antiseptic, but a mild Styptic and Sedative promoting rapid Cicatrisation and Granulation.

In Dusting Bottles 1s. each, or per lb. 5s.

"ANTISEPTICINE" PASTILLES

Registered.

"ANTISEPTICINE" PASTILLES have been made at the suggestion of a medical man who found the "ANTISEPTICINE" itself so valuable in Throat Affections. Each Pastille contains five minims of the "ANTISEPTICINE."

In Boxes, 6d. each.
Or, in Bulk, 2s. 6d. per lb.

"ANTISEPTICINE" TABLETS

Registered.

For the speedy production of an Antiseptic and Deodorising liquid for irrigation of the nasal urethral, and vaginal passages, or Lotion for ulcerated throat, etc.

One Tablet is sufficient to make 10-oz. of Antiseptic Lotion.

Boxes containing 50, 1s. each.

"ANTISEPTICINE" Super-Fatted SOAP IN POWDER.

Registered.

A powerful Antiseptic Soap, useful in various parasitical Skin Affections, and also refreshing as a Toilet Soap.

The Powder is a most convenient method for local application.

In Sprinkler Bottles, 8s. doz.; Bulk. 2s. per lb.

"ANTISEPTICINE" TOOTH POWDER.

An excellent Preservative for the Teeth. 2/6 per lb.

MANUFACTURED BY

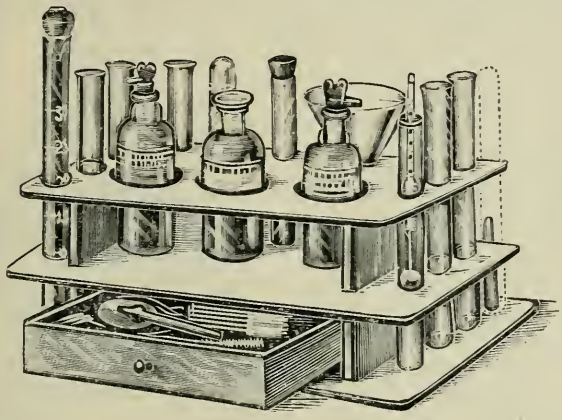
R. SUMNER & CO., Ltd.,

Wholesale Druggists, LIVERPOOL.

SUMNER'S

New URINARY TEST STAND

PRICE **10/6** EACH NET.



PRICE **10/6** EACH NET.

MESSRS. SUMNER & CO. are particularly desirous of calling the attention of medical gentlemen to their new **URINARY TEST STAND.** This handy little Stand has been specially designed with the view of placing a complete set of Urinary Testing Apparatus, with Solutions, in the hands of medical men at an extraordinary low price. We offer it as being equal in every way to the more elaborate stands hitherto designed. Not only is it complete, but the different articles are so arranged as to take up a minimum amount of space, and, consequently, the Stand measures only 10¼-ins. by 5¼-ins. It is well and substantially made, and is really of good appearance, quite an ornament to a consulting room table. The contents are as follows :—

Urinometer
Albuminometer
Spirit Lamp
Drop Pipette with India Rubber Suction Ball
Graduated C.C. Tube
Test Tubes
2 oz. Stoppered Bottle of Nitric Acid
2 oz. Drop Bottle of Roberts' Test Solution for Sugar
2 oz. Drop Bottle containing Esbach's Test Solution for Albumen
Funnel
Test Tube Brushes
Packet each Red and Blue Litmus Paper
Packets of Filter Paper
Watch Glass
Graduated Pipettes

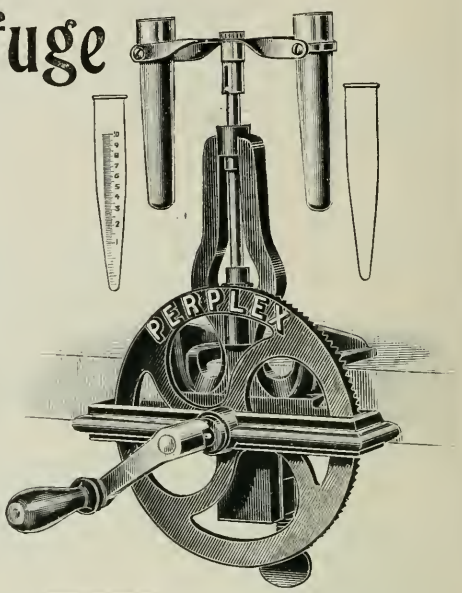
From the above it will be seen that, although offered at such a singularly cheap price, it is both compact and useful, and we may say without fear of contradiction, that a Stand of such exceptional value has never before been offered at the price.

It is admirably adapted for use in Hospital Wards.

R. SUMNER & CO., Ltd., 50a, Lord Street, LIVERPOOL.

THE "PERPLEX"

Hand Centrifuge



has been designed to meet the demand for an efficient apparatus at a lower price than those hitherto available, and is intended to place this useful and necessary apparatus within reach of the general practitioner.

The old test tube method of precipitating Urinary sediments requires at least 20 hours, and the same results are obtained by means of **The "PERPLEX" CENTRIFUGE** in three minutes.

Very useful also for Milk analysis.

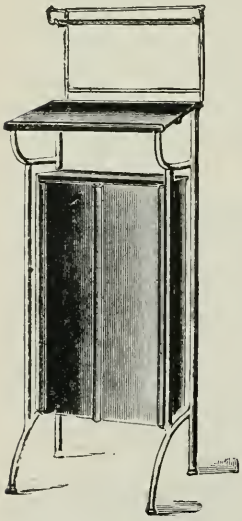
The apparatus must be firmly clamped to a table or bench, all bearings well lubricated, and when in use the two test tubes should be equally filled.

PRICE:

Including two Aluminium Receptacles for the Test Tubes, one Graduated Test Tube, and two Plain Test Tubes,

21/- COMPLETE.

Consulting-Room Desk & Cupboard



(REGISTERED DESIGN).

This handsome piece of Aseptic Furniture is made of seamless steel tubing by an improved process, all edges and joints perfectly rounded, leaving no receptacle for dirt or dust to collect in.

It is intended for the Consulting Room of the up-to-date surgeon, or the out-patient departments of hospitals. It provides a suitable shelf for the reception of Sprays, Bottles, etc., a dust-proof cupboard divided into three compartments for Bandages, Dressings, etc., and closed with a nickel-plated bolt, and a plate glass sloping shelf at a convenient height for writing prescriptions, etc., while standing, the raised edge of shelf preventing anything slipping off.

Total height 56 inches.

Height of sloping desk, 48 inches; width, 20 inches; depth, 16 inches.

Dimensions of cupboard, divided into three compartments with removable shelves, is 29 inches by 16 inches by 8 inches deep.

Price: £6 6s. net.

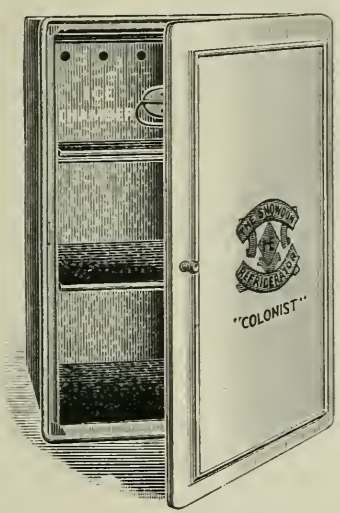
R. SUMNER & CO. Ld., 50a, Lord St., Liverpool.

The "Colonist" Refrigerator.

A light, cheap, well-made ICE CABINET, well adapted for Home and Colonies.

An ideal Safe for keeping Invalids' Foods in during the hot weather. As efficient as the more expensive kinds, and certainly not as cumbersome.

WELL FINISHED IN WHITE ENAMEL.



WELL FINISHED IN WHITE ENAMEL.

The walls are packed with a non-conductive material, by a patent process.

The chest for the Ice is furnished with a Tap, so that as it melts the water can be removed.

The ventilation is good, and it can easily be kept clean, as all the interior fittings are removable.

Made in three sizes :

No. 1.—Price	25 -	20	inches high,	13	inches wide,	14	inches deep.
No. 2.	,, 30 -	22½	,,	15½	,,	16½	,,
No. 3.	,, 40 -	25	,,	18	,,	19	,,

The largest size is recommended as a good domestic Refrigerator, suitable for a Cottage Hospital or Nursing Home.

AGENTS :

R. SUMNER & CO. Ltd., LIVERPOOL.

TRITUMEN

A PURELY NATURAL CONCENTRATED **FOOD**
PREPARED FROM WHEAT.

IT contains 94% of pure vegetable **albumen** and is consequently the most nutritious Food that can be produced. 1-lb. of **Tritumen** is equally nourishing in **albumen** to 5-lb. of **lean beef** or 100 **eggs.**

It holds unchanged all the nutritive salts present in Wheat, such as Phosphates and Chlorides, both of which are of paramount importance in the animal economy; and, moreover, there is present in it about 4% of **Lecithin.**

It is easily digested, and has been found invaluable for **nervousness, brain fag, consumption, mal-nutrition, rickets** and other infantile **ailments.**

Tritumen can be taken in its simple form between wafers, in water, or mixed with any kinds of food, porridge, puddings, &c., or spread over green vegetables.

It bakes a palatable bread or biscuit, free from starch, forming a most excellent food in Diabetes Mellitus.

IRON TRITUMEN

is the **Tritumen** containing 0·4 % of Iron in organic combination. It combines the nourishing and strengthening properties of **Tritumen** with the blood-forming virtues of an organic **Iron** Preparation.

It rapidly improves the appetite and increases the formation of **blood** cells and **Hæmoglobin.** It is found a valuable medicinal food in **Anæmia, Chlorosis, etc.,** and is also very beneficial to Nursing Mothers, as it promotes the secretion of milk, especially in cases in which the quantity and composition is insufficient.

Like **Tritumen,** it can be taken either by itself or mixed with food, either solid or liquid.

Tritumen retails in 1-*lb. and* ½-*lb. Cases* - **3**/- *and* **1 6** *each.*
Iron Tritumen retails in ½-*lb. and* ¼-*lb. Cases,* **3**/- *and* **1**/**6** *each.*

R. SUMNER & CO. Ltd., LIVERPOOL.

For Constipation, Gout & Rheumatism, Liver Complaints, Obesity, &c.,

PRESCRIBE

Hunyadi János

THE BEST NATURAL APERIENT WATER.

Directions for Use.

Dose.—To relieve constipation the average dose for an adult is from a third to half a tumbler, taken on an empty stomach on rising. To obtain the depurative and tonic effects in dyspepsia, biliousness, congestion of the liver, &c., a quarter of a tumbler should be taken every morning before breakfast.

"Hunyadi János" may be taken pure or mixed with hot or cold water. If hot water be used the temperature should be high enough to make the mixture as hot as can be drunk comfortably. If cold, the water should be at the ordinary temperature, that is to say, not iced or ice-cold.

A draught of pure water, hot or cold, taken immediately after, increases the efficacy of the laxative and obviates any after-taste.

For Children.—The dose is proportional to the age. Between 5 and 10 years of age from one to two teaspoonfuls of the water, which may be mixed with milk, will be sufficient. Above 12 the dose is a quarter of a tumbler, taken as above.

N.B.—When administered to persons in bed, somewhat larger doses are required to produce the same effect.

PROPRIETOR—

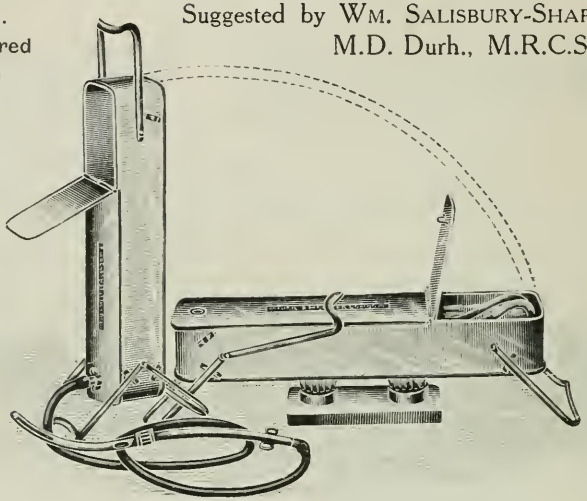
ANDREAS SAXLEHNER, BUDAPEST.

LONDON Agency: Trafalgar Buildings, Charing Cross, W.C.

DOUCHE - STERILIZER.

(M. & M. Registered Design.)

Suggested by WM. SALISBURY-SHARPE, M.D. Durh., M.R.C.S. Eng.



Dimensions, 15½ × 3½ × 2½ inches. Capacity, 2½ pints.
Weight, under 2 lb.

THIS Apparatus can be used horizontally (as shown in illustration) as a Sterilizer, or vertically as Douche. It will go into a full size Midwifery Bag, and Forceps, etc., can be packed inside to save space.

PRICE in Stout Copper - - **£1 1 0**

Spirit Lamp suitable for working above	-	5 6
India Rubber Tubing	per yard	1 6
Bozemann's Intra Uterine Tube	- Metal	6 6
Budin's ditto ditto	- Metal	10 6
Celluloid 6/6 ;	Glass	1/6

BAG TO CONTAIN ABOVE STERILIZER, complete with 5 Stoppered Bottles and Pot for Vaselin, and space for General Instruments and Dressing—

£2 5 0

SOLE MANUFACTURERS—

MAYER & MELTZER,

Surgical Instrument Manufacturers,

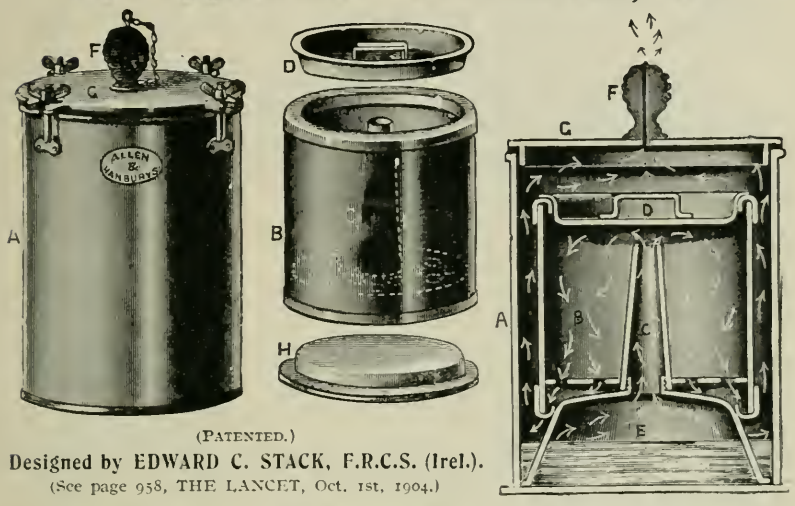
71, GT. PORTLAND STREET, LONDON, W.

Telephone: 5574 Gerrard. Telegrams: "TREPHINE, LONDON."

ALLEN & HANBURYS, LTD.,

THE NEW STERILIZER

FOR SURGICAL DRESSINGS, &c.



(PATENTED.)

Designed by EDWARD C. STACK, F.R.C.S. (Irel.).

(See page 958, THE LANCET, Oct. 1st, 1904.)

STACK'S DRESSING STERILIZER.

This is the cheapest and most portable form of Dressing Sterilizer manufactured, and it is made in A. & H.'s London Factory, of copper, tinned inside, and it can be used with any ordinary Bunsen burner, lamp, or kitchen fire.

Advantages claimed for this Sterilizer are:—

Perfect Sterilization.

Dressings are dry.

Simplicity.—Can be used over Bunsen burner, kitchen fire, &c.

Moderate Price—42s. complete, with drum for carrying dressings in.

Weight of Sterilizer, only	4 lbs. 4 ozs.	Size $9\frac{1}{2} \times 7\frac{1}{2}$ inches.
Weight of Container	2 .. 6 ,,	Size $6\frac{1}{2} \times 6\frac{1}{4}$,,
Total Weight	6 ,, 10 ,,	

Durability.—Made of solid copper throughout: tinned inside.

Air-tight and Dust-proof, which makes it invaluable for storing sterilized dressings.

Price £2 2 0 complete.

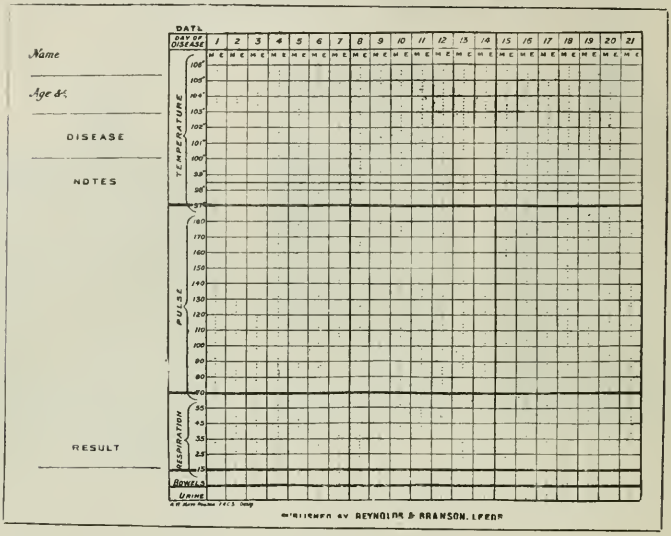
Spare Drums or Dressing Containers, each 10 6.

ALLEN & HANBURYS, Ltd. SURGICAL INSTRUMENT Manufacturers,

48, Wigmore Street, LONDON, W.

Clinical Charts

Suggested by A. W. MAYO ROBSON, Esq., F.R.C.S.



THE chief advantage claimed for these Charts is that the temperature, pulse, and respiration is recorded by means of dots, and any variation can be seen at a glance, instead of having to refer to figures, as in the case of an ordinary Chart.

MORNING & EVENING, and FOUR HOURLY.

Prices - 6d. per dozen; 3s. 6d. per 100.

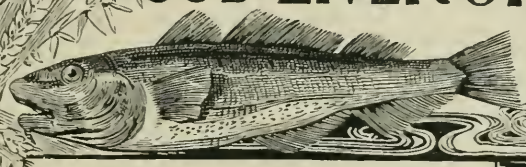
Special Quotations for Quantity.
Samples on application.

REYNOLDS & BRANSON, LTD.,

Surgical Instrument Makers,

LEEDS.

MALTINE WITH COD LIVER OIL



"MALTINE"
With Cod Liver Oil

By the vacuum process rancidity is prevented and the odour and taste of the oil are removed.

Formula:

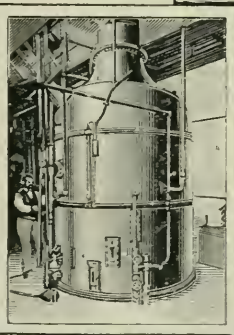
Best Norwegian Oil	..	30 per cent.
"Maltine"	.. ..	70 per cent. by vol.

"MALTINE"
WITH
HYPOPHOSPHITES

Each fluid ounce contains:

Hypophosphite Lime .. 3 grains
Hypophosphite Soda .. 3 grains
Hypophosphite Iron .. 2 grains

Indicated in preference to Syrups of Hypophosphites.



Samples Sent free of Charge to Physicians.

The Maltine Manufacturing Co Ld.
24 & 25. HART St. BLOOMSBURY. LONDON. W.C.

"MALTINE" WITH CREOSOTE.

A FOOD AND ANTISEPTIC AGENT.

Each fluid ounce contains 4 minims of Pure Creosote.

In Prescribing, kindly specify:—"MALTINE COMPANY'

BAYER'S
PHARMACEUTICAL PRODUCTS

Agurin
Aristochin
Aristol
Creosotal-Bayer
Duotal-Bayer
Chinaphenine
Epicarin
Eumydrin
Europhen
Hedonal
Isopral
Protargol
Maretin
Piperazine
Salophen
Lycetol

ASPIRIN.

A reliable substitute for the Salicylates, without their unpleasant by-effects.

Does not cause nausea, tinnitus aurium, etc.

INDICATIONS: Acute and chronic articular and muscular Rheumatism, Lumbago, Sciatica, Influenza, etc.

VERONAL.

A NEW HYPNOTIC.

Free from any Deleterious Secondary Effects. Prompt and thorough in its action.

SOMATOSE.

The most assimilable Nutrient and Tonic.

The ideal food in convalescence. Indicated in all . . conditions of exhaustion and malnutrition, both from acute and chronic disease.

ALYPIN.

A NEW LOCAL ANÆSTHETIC

Qualified in a remarkable degree to

Replace Cocaine in all Cases.

Less toxic and occasioning no mydriasis, and no disturbance of accommodation.

Dose: Corresponds with that of Cocaine.

Can be sterilized and combined with supra-renal preparations.

MESOTAN.

A new Salicylic Acid derivative for outward application in the treatment of rheumatic and gouty affections, muscular rheumatism (lumbago), neuralgic pains (not sciatica); also for relieving the pains in chronic gout (rheumatoid arthritis).

Practically odourless.

Easily absorbed by the skin.

HELMITOL.

(Anhydromethylene citrate of hexamethylenetetramine.)

A new Antiseptic of very high quality in diseases of the bladder. Exceedingly favourable results are obtained in Cystitis, Pyelitis, Phosphaturia, Urethritis Gonorrhoica Posterior, and . . Abscesses of the Urethra.

HEROIN HYDROCHLOR.

A soluble Morphine derivative, possessing several . . important advantages over Morphia Hydrochlor. Can be employed subcutaneously as well as per os.

JOTHION.

An External Iodine Preparation.

It contains iodine to the extent of nearly 80 per cent., is readily absorbed by the skin, and the absence of those deleterious effects, so commonly met with in internal iodine treatment, enables it to effectively replace the internal administration of potassium iodide.

Saloquinine
Salicylate of Saloquinine
Tannigen
Iodothyrine
Somatose Milk-
Somatose Iron-
Somatose Phenacetine-Bayer
Sulphonal-Bayer
Salol-Bayer
Trional-Bayer

For free Samples and Literature apply to

THE BAYER CO. Ltd., 19, St. Dunstan's Hill, LONDON. E.C.

MILO

FOOD

FOR INFANTS.

QUITE A NEW DEPARTURE

based on practical experience and scientific knowledge.

MILK should be the essential part of Any **INFANTS' FOOD**

MILK is the basis of **MILO FOOD**

Combined with Biscuit Scientifically Treated.

Sample and Pamphlet Free in the British Isles on application to

HENRI NESTLÉ, ***48, Cannon St., LONDON, E.C.***

By Royal Warrant to His Majesty the King.

BRAND'S ESSENCE

FROM FINEST BRITISH BEEF.

FOR ALL CASES OF
EXHAUSTION AND . .
WEAK DIGESTION . .

BRAND & CO., Ltd.,

MAYFAIR WORKS,

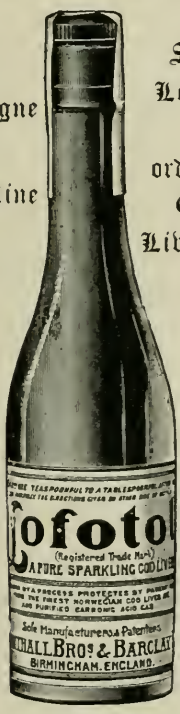
VAUXHALL, S.W.

"LOFOTOL."

(REGISTERED TRADE MARK.)

The New Sparkling COD LIVER OIL

As Champagne is to Still Wine



So is Lofotol to ordinary Cod Liver Oil.

Brit. Medical Journ.:

"Most ingenious. Sensation in the mouth similar to that experienced on the introduction of an effervescing lozenge."

Lancet:

"Digestibility is increased, gas removes the taste of the oil—the oil is protected against the oxidizing influences of the air."

Hospital:

"Advantages are palatability, rapidity of digestion owing to the stimulating influences of the gas, freedom from a tendency to turn rancid."

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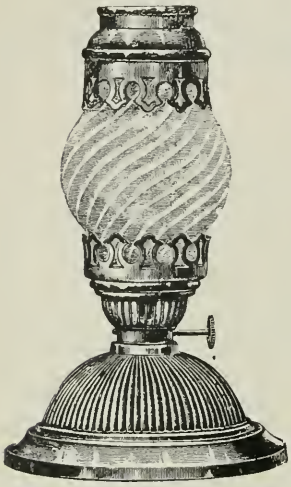

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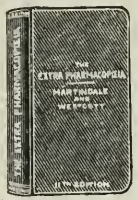

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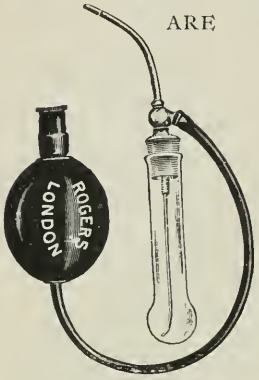

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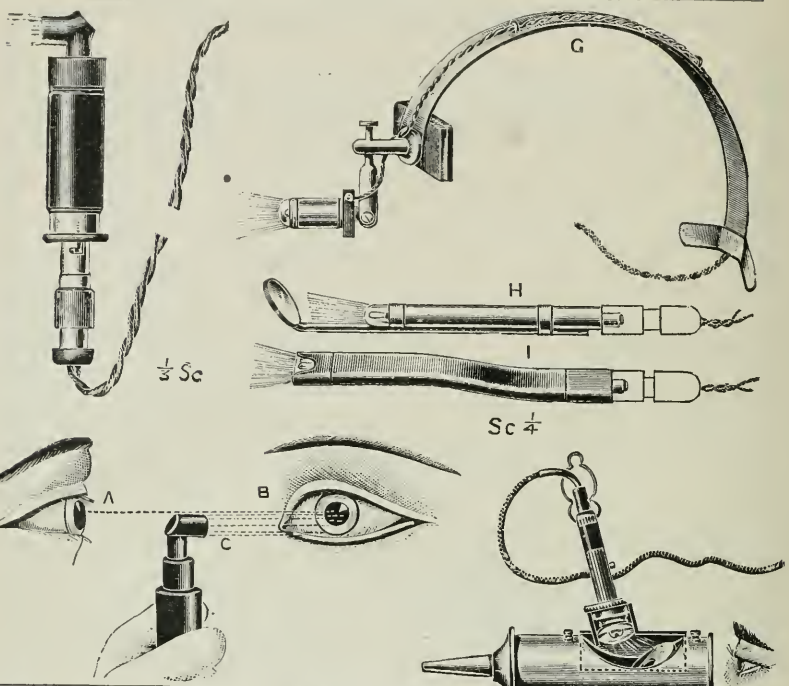

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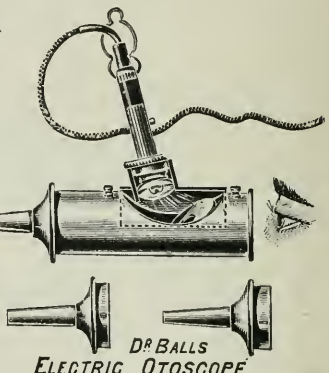

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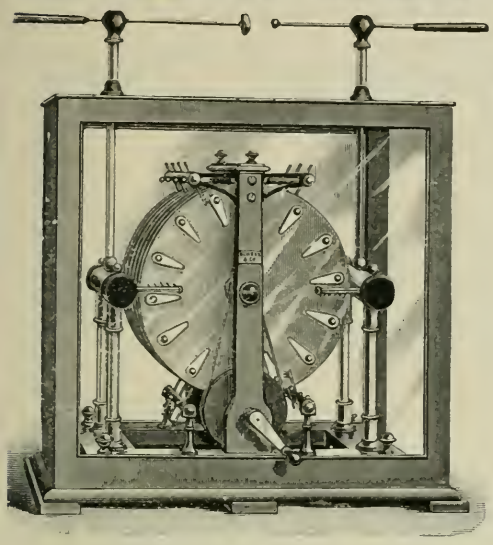

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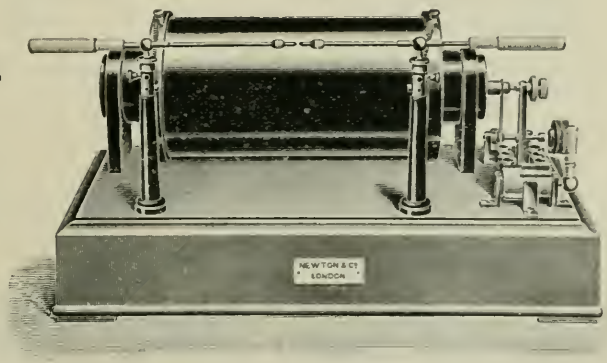

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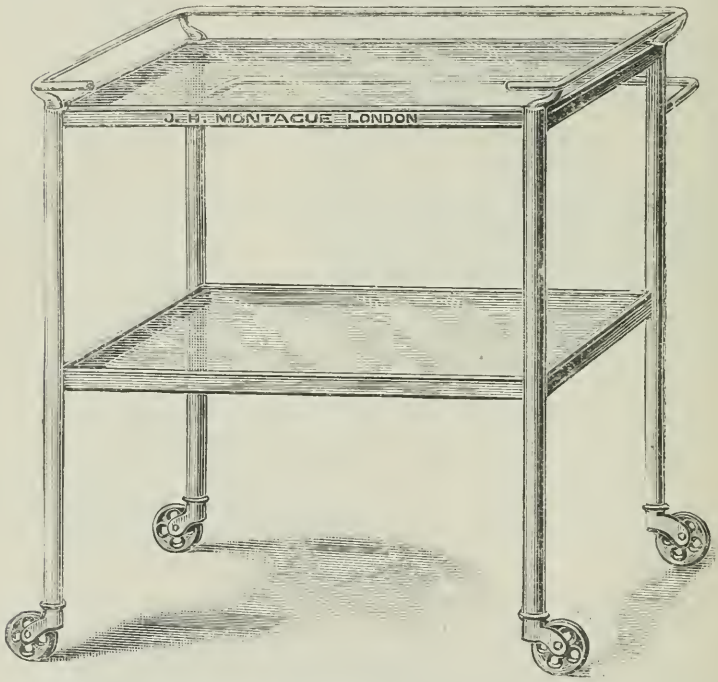

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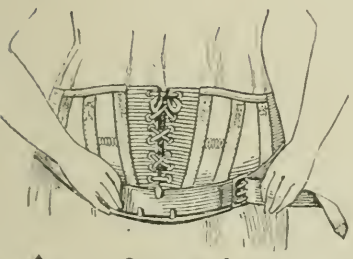

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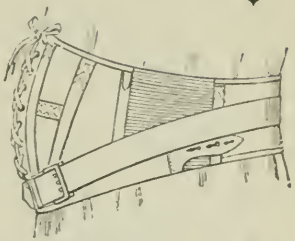

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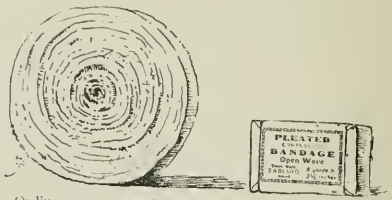

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A YEAR BOOK OF TREATMENT AND PRACTITIONER'S INDEX.

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PREFACE.

The publication of the twenty-fourth issue of the *Medical Annual* has been attended by exceptional difficulties, and it is due to the loyalty and devotion of all concerned in its production that we have nothing more than a slight delay to apologize for to our readers.

The total destruction of the *Medical Annual* Offices by fire, at a moment when a large part of the present work was already in type, was a calamity which we determined to face without an instant's delay: but just when the strain was greatest a fatal railway accident deprived us of the help of Mr. Lewis Wright, who was mainly concerned in passing the work through the press.

The kind help of our contributors in re-writing their destroyed MSS. has enabled us to replace every line of the work as originally prepared: and we believe that this volume will compare favourably with its predecessors as a complete exposition of the present position of Medical Science.

The Synoptical Index of the years 1899-1904 was all in type, but melted in the fire. This is being rapidly re-set, and will be ready for issue very shortly. This work will prove of great value to those who do *not* possess copies of the volumes of which it forms a synopsis, as it gives the recent views on the treatment of every disease at a glance. For those who possess the volumes it will also enable any article on a particular subject to be referred to without an instant's delay.

The very cordial reception given to the last issue of the *Medical Annual*, which was the first of the enlarged series, had encouraged us to make this volume one of exceptional interest to our readers, and we believe no previous issue has contained more valuable matter, both as regards text and illustrations.

We feel very grateful for the sympathy and good-will which have enabled us to over-ride our difficulties, and given us encouragement to do our best to deserve well of the profession.

The Editor.

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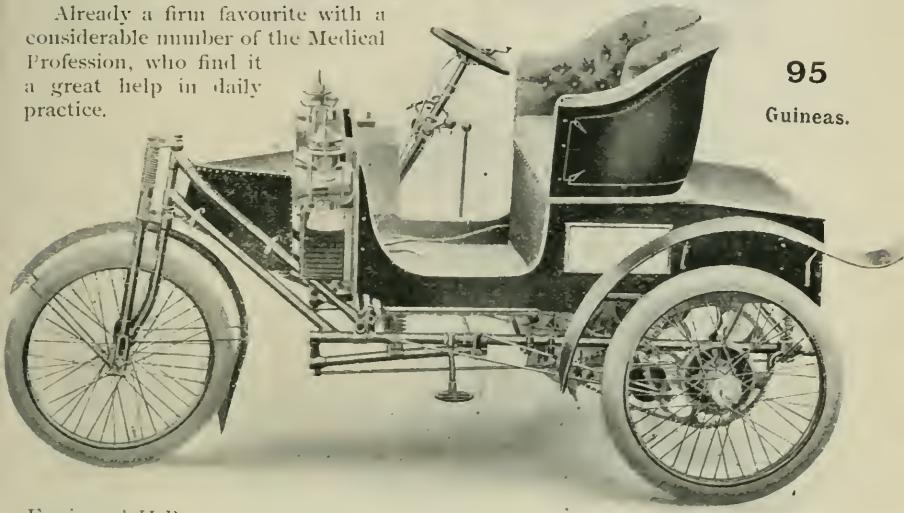

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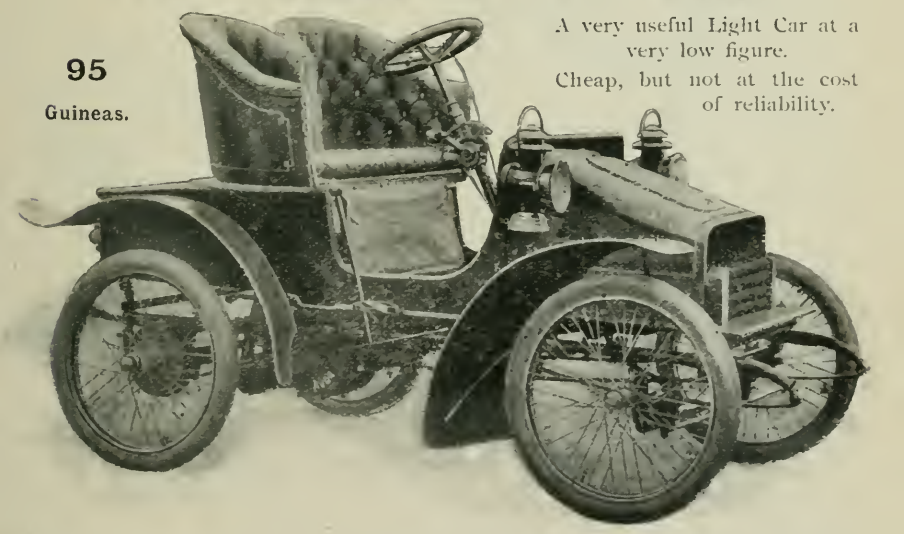

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THE MEDICAL ANNUAL.

Part 1.—The Dictionary of Materia Medica and Therapeutics.

REVIEW OF THERAPEUTIC PROGRESS, 1905,

BY

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GENERAL REVIEW.

THE past year has been a singularly uneventful one from a therapeutic point of view. No real advance seems to have been made, and even the output of new drugs appears to have been restricted.

In 1904 one of the most interesting new drugs was Mesotan, which it will be remembered is a salicyl preparation which passes through the intact skin. In the past year considerable attention has been paid to such percutaneous administration of drugs ; and it is stated that iodine, isopral, and even iron can be given by this method. In the *British Pharmacopœia* there are two iodine preparations which are supposed to possess the property of passing the intact skin. These are the liniment of potassium iodide and soap, and the ointment of iodine. Yet it will be found that if these preparations be applied to the intact skin, almost no iodine can be detected in the excretions, so that for practical purposes both these preparations are useless for producing a systemic action. A new iodine preparation has been discovered to which the name Iothion has been given. It is a propane compound, and possesses the property of passing readily through the skin if it is painted or rubbed on. Large quantities of iodine appear in the urine and saliva after iothion is applied to the skin. It is claimed for this preparation that its use is less likely to induce iodism than the ordinary methods of administering iodine, and it may possibly prove of use in the case of extremely susceptible individuals who cannot take iodides by the mouth. The cutaneous inunction in one case produced a very troublesome itching of the skin.

An interesting claim has been made for Maretin, a hydrazine derivative, which has been in use for some time as an antipyretic. It is stated that this drug exerts a specific action on rheumatic fever. The number of reported cases on which this claim is based is by no means numerous, and some of the cases do not carry conviction. In the only instance in which we have used this drug, the anti-rheumatic action was not very striking.

A new drug has been introduced within the last few months which may possibly prove of value. It is called Alypin, a synthetic preparation whose action is comparable to that of cocaine. It is rather less toxic, and a number of glowing accounts of its properties as a local anæsthetic have been published. So far the reports have been highly laudatory; but it is much too soon to pronounce a decisive judgment of its value.

DICTIONARY OF REMEDIES.

ACETANILIDE.

Clark[1] states that this drug has a fourfold internal action, viz., anodyne, antipyretic, sudorific, and, to a slight extent, soporific. Acetanilide assuages pain, but will not remove all kinds of pain, e.g., it will not cure every form of headache. For **Persistent Headache,** whether of bilious type or due to megrim, a combination of acetanilide 3 to 5 grains, caffeine citrate 1 grain, sodium bicarbonate 5 to 10 grains, gives good results. In **Spasms of the Stomach** or **Gastralgia,** 3 grains acetanilide with 5 grains sodium bicarbonate sometimes acts well. In **Coryza** and **Incipient Colds,** by inducing sweating and reduction of temperature, acetanilide frequently produces wonderful results. In the later stage, where there is malaise, general soreness, shivering, and a feeling of tightness in the chest, repeated small doses of 3 to 5 grains every two or three hours till perspiration is established, always gives relief, and may ward off further mischief. Another method of breaking up a cold is to administer 5 to 6 grains at bedtime, followed by a hot foot-bath and hot drinks of lemonade or whisky and water. Even for **Influenza,** if care is exercised, it may be used to produce perspiration. The dose may be from 5 to 10 grains every two or three hours, but not more than four doses should be administered. The soothing influence of acetanilide is seen in feverish conditions, where its use is followed by a sense of comfort and ease, with a quiet, restful feeling.

Acetanilide may also be used as an external application to wounds. It acts as an antiseptic, and also to a slight degree as an anodyne. It may be used as a dry application to all discharging surfaces, ulcers, open wounds, and in minor surgery. It is specially beneficial in ulcers of the legs.

In reporting two cases of **Chronic Poisoning** with this drug, Stewart[2] points out that all chronic cases of poisoning with coal-tar preparations produce similar mental and physical symptoms. There is cardiac

weakness, cyanosis, and blood changes characteristic of a hæmolytic agent. To some extent these changes resemble those of pernicious anæmia, for there is diminution in the number of the red cells, with alteration in shape and size, and the presence of nucleated red forms, and polychromatism. There is usually an increase of leucocytes and of blood-plates. The increase in the white cells commonly involves the polymorphonuclear cells, but in Stewart's two cases the lymphocytes formed 35 per cent and 37 per cent respectively of the white cells.

References.—[1]*Bost. Med. and Surg. Jour.* Nov. 17, 1904; [2]*Jour. Amer. Med. Assoc.* June 3, 1905.

ACETOPYRINE.

Zwintz[1] recommends this drug as an excellent **Antipyretic.** It does not depress the heart. The respiration is rendered somewhat shallow after medicinal doses. The drug acts as a respiratory poison in toxic doses. It is excreted through the kidneys and acts as a diuretic; it reduces the size of the spleen. The pancreatic secretion is said to be powerfully stimulated. Perspiration is moderately increased.

Reference.—[1]*Deut. Med. Ztg.* No. 77, 1904.

ACETOZONE.

The chemical title for this substance is benzoyl-acetyl-peroxide. When brought into contact with water it splits up into the peroxides of acetyl hydrogen and benzoyl hydrogen, which act as powerful germicides. Acetozone occurs in fine acicular crystals. It is slightly soluble in alcohol, more so in ether and chloroform. Water dissolves from 1 part in 1000 to 1 part in 10,000, depending on the temperature and other circumstances. Acetozone is put upon the market mixed in equal parts with an inert absorbent powder.

Burnet[1] has used the preparation in a number of cases. He employs it in two forms, as a watery solution 2½ grs. to 4 oz., or as a dusting powder containing one part acetozone to 250 parts of talc. The watery solution should be freshly prepared. He has found it an excellent **Antiseptic** for all kinds of septic wounds. It was of great benefit in a case of **Cystitis.** In using acetozone it must be remembered that in too great concentration it causes considerable pain and smarting. The watery solution seems to be most active if it is prepared with cold water. Hot water appears to cause too rapid a disintegration of the compound, hence the therapeutic results are not so successful. The drug has no corrosive action on metallic instruments.

Llewellyn[2] reports 18 cases of **Typhoid** treated with it. He used 30 grs. daily dissolved in 3 or 4 pints of water. The dose varied from a wineglassful to a teacupful. Lemon juice was added to each dose. In all cases within four days a steady fall of temperature began, and the patients were convalescent before or on the fourteenth day. Acetozone causes slight constipation. It is markedly **Diuretic,** and in a few cases caused vomiting with the first few doses.

References.—[1]*Med. Press,* Aug. 17, 1904; [2]*Aust. Med. Gaz.* Feb. 20, 1905.

ACIDS AND ALKALIES.

In a leading article the *Therapeutic Gazette*[1] summarizes the recent advances made in our knowledge of gastric digestion. The action of the pyloric sphincter is emphasized. It has been proved that the presence of food in the stomach causes a reflex closure of the pylorus, and this contraction persists till a certain amount of acid is excreted, as a result of which the sphincter relaxes and allows a quantity of the acid chyme to escape into the duodenum, where it is immediately neutralized and subjected to the action of the pancreatic and intestinal juices. As the gastric acidity rises the pylorus again becomes relaxed, and thus the process goes on, and substances requiring but little gastric digestion rapidly reach the intestine. Thus starches, which require but little gastric digestion, cause a copious secretion of gastric juice, so that the necessary acidity is rapidly obtained and the starches pass into the duodenum. On the other hand proteids, which combine with a large portion of the acid secreted, are retained much longer in the stomach. Further, in the intestine itself, the presence of the acid in the duodenum causes the formation of secretin, which is absorbed and carried to the pancreas, where it leads to the secretion of pancreatic juice. When, owing to the alkaline secretion, the acid is neutralized, the formation of secretin ceases, and with this the pancreatic juice diminishes. Finally, the intestinal juices contain enterokinase, which actuates the ferments of the pancreatic juice, converting the zymogen into trypsin.

From this brief summary it is evident that the ordinary indiscriminate administration of acid or alkali may seriously affect not only the digestion but also the rate at which substances are passed into the intestines. Acids by increasing the acidity will tend to hasten the passage, while alkalies on the other hand will lead to retention in the stomach, and interfere with the action of the intestinal secretions on the carbohydrates.

Reference.—[1]*Ther. Gaz.* March, 1905.

ADRENALIN.

Neujean[1] states that the acceleration of the pulse after injection of adrenalin is due to excitation of all the cardiac accelerator apparatus, both central and peripheral. The cerebral vessels also contract, causing anæmia, and the vasomotor centre is only stimulated secondarily by means of this cerebral anæmia.

Baum[2] has studied the action of adrenalin preparations through the microscope. He finds that though the smallest arteries and vessels may be seen to contract, there is no action on the capillaries. The active substance does not penetrate through the skin, and may thus be used as a delicate test for abrasions. He further finds that the more nearly a diseased tissue approaches the normal, the more energetic and lasting is the action of adrenalin. It fails in lupus erythematosus and teleangiectatic venous conditions. The chemical resemblance between adrenalin and brenz-catechin led him to test the physiological

action of the latter substance, and he found that it exerted a vaso-constrictor effect undistinguishable from that of adrenalin. Spermin has an antagonistic action to adrenalin.

Hildebrandt[3] uses suprarenin 1-1000 freely in minor surgery. The action of 15 to 20 drops is sufficient to produce a toxic effect when injected subcutaneously, so that less than 15 minims should always be used. In strong concentration it may cause gangrene of the tissue, or give rise to secondary hæmorrhage from the temporary occlusion of large vessels, which bleed whenever the reaction passes off. Consequently it must not be used as a hæmostat when the bleeding is from a large vessel, but it is extremely useful in bleeding from mucous membranes or from the bladder. Hamm[4] also reports favourably of suprarenin, which he says is much cheaper than adrenalin.

Lesage[5] has studied the toxic action of adrenalin on animals. He finds that it acts as a poison of the nervous system. The power of resistance varies in different animals. The dog, rabbit, and guinea-pig succumb to intravenous injection of 0·1 to 0·2 mgram per kilo of body weight, but the cat is much more resistant, requiring 0·5 to 0·8 mgram per kilo, and the lethal action is much slower. In the dog death is due to cardiac arrest, while in the cat it results from asphyxia.

Janowski[6] recommends the use of adrenalin in **Acute Œsophagitis** following poisoning with caustic fluids. The symptoms of dysphagia are removed, so that within 5 to 10 minutes of taking the adrenalin the patient is able to swallow fluids. This effect is fairly lasting, as the administration three or four times in the day of 5 to 10 drops of 1–1000 solution of adrenalin gives permanent relief. Janowski believes that the administration of adrenalin shortens the course of the pathological changes.

References.—[1]*Arch. Intern. de Pharm.* p. 45, 1904; [2]*Berl. klin. Woch.* Jan. 23, 1905; [3]*Ibid*, No. 1, 1905; [4]*Deut. Med. Woch.* Dec. 22, 1904; [5]*Arch. de Pharm.* p. 245, 1904; [6]*Arch. f. Verd.* Bd. 10, 1904.

AIR.

Desplats[1] recommends the subcutaneous injection of air to overcome the pain of **Neuralgia, Sciatica, Lumbago, Intercostal Neuralgia,** etc. The injections cause no pain, and the relief is either immediate, or may manifest itself in the course of the next few hours. Desplats uses a hypodermic needle, which he connects with the pumping portion of an ordinary thermo-cautery. He distends the reservoir and allows the air in it to pass gradually into the tissues. In a very highly vascular region it is well to introduce the needle first to ensure that a vessel has not been pierced.

Mongour and Carles[2] find the procedure of great use in intercostal neuralgia and sciatica. They inject from a quarter to one-half litre of air, which takes about 8 to 10 days to be absorbed.

References.—[1]*Arch. Méd. Belg.* Feb. 1905; [2]*Jour. d. Méd. d. Bord.* Aug. 28, 1904.

ALCOHOL (Wood).

Owing to its cheapness and freedom from tax, methyl (wood) alcohol is largely used in America as an adulterant of grain alcohol[1]. A deodorized, purified form sells as "colonial spirits." As methyl alcohol is distinctly toxic, many cases of poisoning have occurred. The symptoms are first slight intoxication, later severe headache, pallor, gastric pain, gastro-intestinal irritation, retching, dilated pupil, partial or complete blindness, paralysis of the legs, dyspnœa, delirium, collapse with stertorous breathing and unconsciousness. The toxic amblyopia is a constant feature, and is due to retro-bulbar neuritis. It has been known to follow a dose of 2 to 5 drachms. A cystitis is frequent. The fatal dose is probably from 4 to 8 oz. The post-mortem changes are ecchymosis in the stomach and intestine, with congestion of the kidneys. Possibly the prolonged action may be due to the formation of formiates, which are excreted very slowly.

References.—[1]*Bost. Med. and Surg. Jour.* Dec. 22, 1904, and *Ther. Gaz.* March, 1905.

ALPHOZONE.

This is an organic peroxide. It is a crystalline powder soluble in water. It is more stable than the ordinary metallic peroxides, and does not act on potassium permanganate in the cold. It is strongly acid to test paper. Alphozone is really a substitution product of hydrogen peroxide, in which the H atoms are replaced by two succinyl radicles, the formula being $(C_4H_5O_3)_2O_2$. It is claimed that alphozone is non-toxic, and in **Germicidal Power** equal to corrosive sublimate[1].

Reference.—[1]*Lancet*, Feb. 11, 1905.

ALYPIN (A New Cocaine Substitute).

Impens[1] describes a new local anæsthetic which has been prepared by Hoffmann and himself. It is a hydrochloric acid salt of benzoyl-tetramethyldiaminoethyldimethyl carbinol. The trade name of Alypin has been selected for this substance.

Alypin is a crystalline non-hygroscopic body which melts at 169° It is very readily soluble in water, the solution being neutral in reaction. The addition of small quantities of sodium bicarbonate causes no disintegration. The watery solution can be boiled for five to ten minutes without undergoing any change or loss of anæsthetizing power. It is readily absorbed from mucous membranes and subcutaneous tissue, and exerts a powerful anæsthetic action. The anæsthetic property is comparable to that of cocaine, but alypin is somewhat stronger, acting in dilutions in which cocaine is quite inert. For general purposes alypin is less toxic than cocaine. Large doses cause symptoms resembling cocaine intoxication, with convulsions which bring about death. In dogs the lethal dose is almost double that of cocaine. There is but little depressing action produced on either circulation or respiration. With large doses the respiration is slightly slower, and the individual respirations are deeper. The heart is also slowed with large doses, but in the small amounts used for local

anæsthetizing, there is no alteration in the circulation. On the vessels the action of cocaine differs from that of alypin. Alypin, whether used subcutaneously or locally, causes vascular dilatation. On the other bodily functions, temperature, urinary secretion, and gaseous interchange, alypin has but little action, though it exerts a slight inhibitory action on protoplasm, preventing, e.g., the fermentation of yeast. Alypin is excreted by the kidneys.

Impens concludes that the new substance will prove an adequate substitute for cocaine, as it is equally efficient, while it is much less toxic. Several clinical reports have already appeared which substantiate the claims of Impens.

Seifert[2] discusses its use as a local anæsthetic for operative work on the **Throat and Nose.** He has nothing but good to say of the new drug. In 10 per cent solution it is an efficient anæsthetic for mucous membranes. He has used it extensively for cauterizations in hyperplastic rhinitis, and finds that quadruple application of the ten per cent solutions renders simple cauterization with chromic acid quite painless. It causes no vaso-constriction, which is possibly a disadvantage, as it prevents a thorough view of the whole field. It has no toxic action. Similarly it proved quite efficient for general operation work in the nose, and in a limited number of throat cases in which he used it Seifert found alypin as good as, if not better, than cocaine.

Seeligsohn[3] reports on the action of alypin in **Ophthalmic Work.** He uses a 4 per cent solution. This causes some smarting when first applied, but in a minute or two anæsthesia is induced, and becomes complete in the course of the next three or four minutes. In most cases some hyperæmia is caused. The pupil is not altered, and accommodation remains unaffected. The anæsthesia lasts for ten to fifteen minutes. Contrasted with cocaine solutions of the same strength, the alypin anæsthesia develops a little slower but lasts a minute or two longer. For general operative work on the eye alypin is an excellent anæsthetic, which has the advantage over cocaine of causing no mydriasis or disturbance of accommodation, while the tension is not raised, and there is no subsequent drying up of the superficial corneal layers.

Stotzer[4], whose experience with the new drug was obtained in general minor surgical operative work, finds alypin a perfect substitute for cocaine. The subcutaneous application caused good anæsthesia, and there was but little initial smarting. In his experience its anæsthetizing power is at least equal to that of cocaine, while in all other points it is superior. The alypin solution can be sterilized by heat. Alypin caused no action on the cerebrum. It never produced mental excitement, giddiness, or congestion, while it is distinctly less toxic. Finally he states that alypin is rather cheaper than cocaine.

Sicherer[5] has also published an account of his experiences with alypin as a local anæsthetic for eye work. He recommends the use of a 1 to 2 per cent solution. It may cause a slight burning sensation, and in some cases there is conjunctival hyperæmia, but these are very transient,

and when the anæsthetic action has passed off, the eye resumes its normal aspect, as there is no mydriasis, disturbance of accommodation, or subsequent drying of the cornea.

Neustätter[6] finds that on the whole alypin is an efficient substitute for cocaine in ophthalmic work, but he finds it more irritating and less powerful as an anæsthetic. The individual reaction varies somewhat. One patient is anæsthetized with 3% solution, while another may not be completely anæsthetized with 10% solution, and may require cocaine. He finds that alypin acts well in hay fever. The drug does not raise intra-ocular tension, while a further advantage is the absence of any action on the pupil, so that a patient, after an installation of alypin, may resume work immediately without suffering any disturbance of accommodation.

REFERENCES.—[1]*Deut. Med. Woch.* 1905, No. 29; [2]*Ibid*, No. 34.; [3]*Ibid*, No. 35; [4]*Ibid*, No. 36; [5]*Ophth. Klin.* 1905, No. 15; [6]*Münch. Med. Woch.* No. 42, 1905.

ARISTOCHIN.

Koeppe[1] warmly recommends the use of this drug in **Whooping-Cough.** He uses relatively large doses. For children under one year, 4 grains is the dose; for children over one year, 8 grains. These amounts may be given three or four times in the day. If a dose is vomited the same amount should be immediately repeated. The preparation is tasteless, and is readily taken. To ensure solubility it is well to follow up the aristochin with a mixture containing hydrochloric acid Despite the high dosage, no unpleasant effects were seen. The action of the drug reduces the number of paroxysms, and in some instances it appears to cut short the disease.

Deutsch[2] confirms these observations. His experience was gained with 35 cases of whooping-cough. His dosage was somewhat smaller than that of Koeppe. For infants at the breast the ordinary dose was $\frac{3}{4}$ to $1\frac{1}{2}$ gr., which, if necessary, may be increased to 3 to 4 grains thrice daily. For older children the normal dose is 5 grains, which may be increased to $7\frac{1}{2}$ grains thrice daily.

Kunst[3] has treated 18 cases of **Malaria** with aristochin with excellent results.

REFERENCES.—[1]*Deut. Aerzte. Ztg.* May 1, 1905; [2]*Centr. f. Kinderh.* Hft. 3, 1905; [3]*Arch. f. Schiffs. u. Tropenhyg.* viii. 1904.

ARSENIC.

At the request of the Pharmacopœia Committee of the General Medical Council, Prof. Dunstan with Mr. Robinson[1] have laid down certain standards regarding the limits within which arsenic may be contained in pharmacopœial drugs. As a test which can be used by the ordinary druggist, they recommend the use of the fact that arseniuriated hydrogen stains paper which has been impregnated with mercuric chloride. In suggesting the limiting quantity of arsenic, the two questions of medicinal purity and manufacturing possibilities were kept in mind. The amounts suggested certainly ensure sufficient purity

for medicinal purposes. As a general rule, for the majority of drugs which are used in small doses, a limit of three parts of white arsenic per million parts has been recommended. This represents $\frac{1}{350}$ gr. of white arsenic to the pound. Thus half a pound of a drug would only contain a quantity of arsenic equal to a small medicinal dose, while two pounds would represent a large medicinal dose. To ensure further safety, tartaric and citric acids, which are comparatively largely employed in making foods and drinks, are specially restricted to $\frac{1}{100}$ gr. per pound.

REFERENCE.—[1]*Brit. Med. Jour.* Oct. 1, 1904.

ASPIRIN.

Burnet[1] has employed this preparation very freely in the treatment of **Rheumatic** affections. He prefers to give it in lemon water. It should not be given with alkaline preparations, as they decompose it, setting free the salicylic acid. If given in lemon water or cold milk it does not irritate the stomach. It should not be given in warm solutions or in the form of tabloids. For adults the dose is 10 to 15 grains; for children 3 to 5 grains, but as much as 10 grains may be given without any bad effects. For **Rheumatic Fever** 10 to 15 grain doses are given every four hours. This causes profuse perspiration, and within three days the temperature is normal. The drug is then administered in smaller doses for some time longer. He finds aspirin extremely useful in the treatment of rheumatic affections in children; as in **Chorea**, acute **Rheumatic Fever, Acute Sore Throat** of rheumatic origin, rheumatic **Torticollis**, and the **Growing Pains** of children. In **Psoriasis** of children large doses of 10 to 15 grains thrice daily give good results. In 5-grain doses every four hours aspirin controls the fever of tubercular peritonitis. These small doses frequently repeated do not produce the profuse perspiration of a single large dose. The aspirin has no effect on the course of the tubercle. In a case of **Diabetes** aspirin (without any alteration in the diet) reduced the sugar in the urine to a trace.

Merkel[2] recommends aspirin as a reliable **Analgesic** in inoperable cancer of the uterus, neuralgia from pressure of tumours, in the pain of peritonitis due to acute gonorrhœal infection, and in midwifery for excessive after-pains or pelvic neuralgia occurring in protracted labours.

REFERENCES.—[1]*Lancet*, May 6, 1905; [2]*Deut. Arch. f. klin. Med.* 1905.

BARIUM CHLORIDE.

Pesci[1] recommends barium chloride as a reliable **Diuretic** in old-standing pleural effusions. It is also useful in the early stages of failing compensation in **Valvular Cardiac Disease**, as it strengthens the arterial muscle. Similarly it is of use in **Continued Fevers** where the pulse becomes dicrotic from relaxation of the vessel walls. The action is not so much on the heart as on the muscular walls of the arteries. Barium chloride is not cumulative, and does not irritate the stomach or kidneys. It has little action in arrhythmia. The average adult dose is 20 cgrams=3 grains three or four times in the day.

REFERENCES.—[1]*Rif. Med.* Nov. 9, 1904; *Brit. Med. Jour.* Feb. 11, 1905.

BIRNYRAL (Bornyval).

This drug, the valerianic ester of borneol, is a valerianic acid extract of oil of valerian. It is warmly recommended by Schöffler[1] as a rapidly acting, effective, palliative remedy for **Hysteria.** It is specially suited for cases where a rapid action is desired.

Jos. Möller[2] uses it for **Cardiac Neuroses** of all types. In some cases of **Nocturnal Incontinence** improvement followed its use. Menstrual and climacteric troubles, insomnia, and hysteria were relieved by it.

References.—[1]*Deut. Med. Ztg.* March 9, 1905, *Med. Press,* March 22, 1905 ; [2]*Med. Press,* June 22, 1904.

BORIC ACID.

Chevalier[1] points out that intoxication symptoms may occur after the use of boric acid dressings, especially when the drug is applied to wounds in the form of a powder. Toxic symptoms always arise when the drug is absorbed in considerable quantity and the elimination is interfered with. The symptoms are variable, e.g., cutaneous eruptions, or there may be nervous or gastro-intestinal trouble. The heart is rarely implicated. Chevalier is convinced that boric acid is not harmless after it is absorbed, especially if the elimination is defective. It should be used with great caution in patients suffering from renal insufficiency.

Reference.—[1]*Rev. Franç. de Méd. et de Chir.* Jan. 9, 1905.

BROMETONE.

Brometone[1] is an excellent sedative in mild conditions of **Insomnia** and excitement. It gives good results in allaying symptoms of narcotic abstinence. For the nervous affections of children and adults, small doses of brometone may be used to replace the usual large doses of bromides. For children of six years, 2 grs. thrice daily act excellently in **Chorea** and **Epilepsy.** In about 60 per cent of epileptic cases from all sources, it lessened the frequency and severity of the attacks, but in no case did it cure the epilepsy. The dose required was about one-fifth to one-fourth that of the ordinary amount of bromide.

Reference.—[1]*Med. and Surg. Monitor,* June 15, 1904, *Ther. Gaz.* Sept. 15, 1904.

CACTUS GRANDIFLORUS.

Ellingwood[1] considers this drug in every way superior to digitalis. It increases the musculo-motor energy of the heart, raises arterial tension, and strengthens the pulse. It does not irritate the stomach, and is not cumulative. It is indicated in all cases of **Atonicity of Heart,** but is contra-indicated in cases of violent heart action due to temporary causes.

Reference.—[1]*Med. Rec.* June 3, 1905.

CAMPHOR.

The injection of camphor is one of the favourite methods of strengthening a failing heart. It is usually supposed that in addition to a stimulating action on the vasomotor centre, camphor exerts an action

on the heart muscle. Seligmann[1] has investigated this aspect of the question. He used curarized cats, but was unable to come to a definite conclusion. The camphor occasionally strengthened the cardiac contractions, but the results were not constant. On using the "surviving" cat-heart fed with defibrinated blood and physiological salt solution, he found that the addition of camphor to the circulating fluid abolished the condition known as heart-fluttering, which results from insufficient cardiac contraction. This condition frequently comes on spontaneously in the artificially-nourished mammalian heart. It can also be readily induced by causing a weak induced current to act on the heart muscle. If a solution of camphor be circulated through a heart in this fluttering condition, the heart resumes the regular strong contraction, and electric stimulation only produces a slight degree of trembling, which ceases as soon as the current is stopped. Without the camphor the fluttering continues from 5 to 10 minutes after the current is cut off.

Boehme[2] has studied the action of camphor on the invertebrate heart. He finds that a heart which has been slowed by chloral-hydrate beats more rapidly and vigorously when camphor is added to the circulating fluid, or if camphor be applied to the intact heart. Very frequently the application of camphor will cause a heart which has ceased beating to resume regular contractions.

Maas[3] points out that the action of digitalis and camphor on the heart are totally different. The only similarity they possess is their power of regulating the action of the circulation.

REFERENCES.—[1]*Arch. f. Exper. Path. u. Pharm.* Hft. 5, 1905; [2]*Ibid*; [3]*Berl. klin. Woch.* Jan. 23, 1905.

CANNABIS INDICA.

Carrière[1] recommends cannabis indica for preventing the onset of **Migraine.** For this purpose he uses pills containing ¼ gr. of an alcoholic (60 per cent) extract of cannabis indica. The pills must be taken for a long time. At first one pill at bedtime is sufficient, but if the migraine proves intractable, this dose may be doubled and used for alternate spells of fifteen days with one pill; i.e., for fifteen days 2 pills at bedtime, and the second half of the month only one pill. In very severe cases it may be necessary to administer an additional morning pill.

REFERENCE.—[1]*Presse Méd.* July 19, 1905.

CANTHARIDIN.

Ellinger[1] has noticed the interesting fact that in rabbits the injection of cantharidin causes only very slight renal irritation if the urine remains alkaline in reaction. If the urine is acid, the same dose causes great renal irritation, resulting in death. He states that cantharidin is the lakton of dibasic cantharidic acid. In the presence of alkali this acid forms salts, but in the presence of free acid it splits up, not into an oxyacid but into cantharidin. The difference in toxicity is probably due to this fact.

REFERENCE.—[1]*Münch. Med. Woch.* No. 8, 1905.

CARBON BISULPHIDE.

Francine[1] reports a case of acute poisoning. The face was suffused and cyanosed. The eyes were dull and stuporose. The most striking feature was the breathing. The respirations were very slow, numbering about 12 per minute, and were accompanied by great inspiratory effort. Expiration was deep, prolonged, and blowing. The heart was not much affected, but the pulse was weak. Gait was much disturbed; there was some ataxia, and marked swaying with the eyes closed. The mental condition was not unlike that of a man half drunk. The urine contained neither albumin, sugar, nor blood.

Reference.—[1]*Amer. Med.* May 27, 1905.

CASTOR OIL.

Carlton[1] recommends the following formula for disguising the taste of castor oil, under the name of mist. olei ricini dulcis:—

R	Vanillin	gr. xx	1·5	Alcohol	℥iij	100·0
	Olei menth. pip.	℥j	4·0	Tinc. persionsis	℥ss	15·0
	Saccharin	℥jss	4·0	Olei ricini, q. s. ad. ½ gallon		2000·0

Dissolve the vanillin, oil of peppermint, and saccharin in the alcohol. Add the tincture of cudbear to the oil and shake thoroughly. Finally unite the two mixtures.

This mixture keeps well, looks nice, is pleasant to take, does not leave a bad after-taste, and disguises the taste of the oil.

Reference.—[1]*Med. News*, Oct. 8, 1904.

CHLORÆTHOFORM.

This new anæsthetic is a mixture of chloroform and a small quantity of ethyl chloride. Chloroform made from acetone is said to be a less satisfactory anæsthetic than chloroform made from alcohol. With the former the patients tend to cough more, and to go under more slowly. Wade and Finnemore[1], from a series of fractional distillations, conclude that this difference in action depends on the fact that acetone chloroform begins to distill at 55° and alcohol chloroform at 54°. In the latter instance the portion distilling between 54° and 55° is found to be ethyl chloride, which is present to the extent of about 0·05 per cent in the chloroform made from alcohol. They conclude that as no ethyl chloride is present in acetone chloroform, the difference in action may be due to this substance. The addition of a small quantity of ethyl chloride to the acetone chloroform made it equally efficacious as an anæsthetizing agent to alcohol chloroform. To remove all uncertainty from the action of the chloroform they recommend the addition of a sufficient quantity of ethyl chloride to bring up the amount to 0·25 per cent. This mixture acts well, and gives as good results as chloroform made from ethyl alcohol.

Reference.—[1]*Lancet*, March 4, 1905.

CINNAMATE OF SODIUM.

Charteris and Cathcart[1], from experiments on rabbits, conclude that the intravenous injection of hetol does not cause stimulation of the bone marrow. A slight permanent increase of the leucocytes in

the peripheral circulation was induced, due almost entirely to an increase in the mononuclear elements. The spleen showed slight evidences of stimulation.

Blum[2] strongly recommends the treatment of **Phthisis** with intravenous injection of hetol (cinnamate of sodium). During the first week of treatment the patient is kept from work, but is allowed thereafter to resume work gradually. The initial dose is 0·5 mgram; this is increased by 0·5 mgram to 1 mgram at a time till 10 mgrams or even 15 mgrams are being injected. If headache or other unpleasant effect is produced, the drug is stopped for a time.

REFERENCES.—[1]*Jour. Path. and Bact.* Nov. 1904; [2]*Ther. Monats.* June, 1904.

CITARIN.

Citarin is a formaldehyde compound which readily liberates formaldehyde in the tissues, and which is said to act as a good solvent for uric acid. The other portion of the drug consists of sodium citrate, which is oxidized into sodium carbonate, thus increasing the alkalinity of the blood and rendering it more capable of dissolving uric acid.

Gernsheim[1] has used citarin successfully in both **Acute** and **Chronic Gout.** For acute cases 6 to 8 grams given in 2 gram doses every two hours removes the pain and swelling within ten hours. In a chronic case 5 grams given on five consecutive days led to the almost complete disappearance of symptoms which had lasted for nine months. The drug was taken as a powder or tablet, and in each case caused slight diarrhœa. Floret[2] and Baaz[3] make similar claims for the drug, and praise its rapid action in acute gout, and in the acute exacerbations of chronic gout.

REFERENCES.—[1]*Ther. Monats.* see *Brit. Med. Jour.* Oct. 22, 1904; [2]*Deut. Med. Woch.* No. 4, 1905; [3]*Zeit. f. Artz. Fortbild.* No. 4, 1905.

COLCHICINE.

Dixon points out[1] that this drug produces a marked effect on the leucocytes. A leucopenia is first produced affecting chiefly the polymorphonuclear leucocytes, which for a few hours fall to a very marked degree in the peripheral circulation. They then rise far above the normal number. The cells become swollen, the nucleus indistinct, and the granules are extruded from the cells. These degenerated leucocytes eventually pass to the lungs or bone marrow. The number of red cells is also slightly increased, and the specific gravity of the blood rises. The effect of the drug lasts 24 hours. In the bone marrow of young rabbits colchicine caused the marrow to become hyperæmic, and filled with a form of corpuscle which was probably the polymorphonuclear corpuscle of the peripheral circulation. There was also increased mitotic change in the marrow, pointing to a leucoblastic stimulation.

REFERENCE.—[1]*Path. Soc. Lond.*; *Lancet*, Dec. 24, 1904.

COUMARIC ACID.

In attempting to find a drug which will have a more pronounced action than sodium cinnamate, Morgan[1] has investigated the action of the ortho-, para-, and meta-coumarates of sodium. Sodium ortho-coumarate is a very soluble, stable salt, which produces a well marked and rapid leucocytosis. Sodium para-coumarate is a less soluble salt, with a similar though less intense action. The meta-coumarate of sodium is apparently even more active than the ortho- salt.

REFERENCE.—[1]*Brit. Med. Jour.* May 27, 1905.

CREOLIN.

Hubert[1] recommends creolin either by the mouth or in rectal injections for the treatment of **Asiatic Cholera.** The ordinary dose is 4 to 5 drops in water, four to six times daily, but strong men can take up to 6, 8, or 10 drops. The first two doses should be given at one hour interval, and succeeding doses at three to four hours interval.

REFERENCE.—[1]*Vratch,* May 28, 1905.

CRYOGENIN.

Segre[1] states that in man the action of this drug is almost entirely that of an **Antipyretic.** It is not an analgesic. In health a dose of 1 gram causes no change in temperature, pulse, or respiration. It causes a slight increase of urea and uric acid, but the urinary chlorides, sulphates, and phosphates are diminished. The excretion of the drug is slow, and traces may still reduce Fehling's solution even six or seven days after the administration has ceased. Prolonged administration or the use of too large doses causes some changes in the blood, diminution in the red corpuscles, hæmoglobin, and polynuclear leucocytes, with a slight increase in the lymphocytes and eosinophils.

The chief point about the antipyretic effect is the prolonged action. Doses of ½ to 1½ gram reduce the temperature from 1° to 3°. It is particularly useful in **Enteric Fever** and **Phthisis.** In some cases where it had been used for some weeks it caused collapse and a pruriginous eruption. The dose recommended is ½ drachm thrice daily.

REFERENCE.—[1]*Gaz. Med. Ital.* Dec. 15, 1904; *Brit. Med. Jour.* May 20, 1905.

CYLLIN.

Sommerville[1] has investigated the comparative disinfecting power of cyllin and carbolic acid on the cholera vibrio and on the bacillus of dysentery. Cyllin proved much more active than phenol. In the case of the cholera germ, cyllin in the dilution of 1–5500 proved as active as phenol in the dilution of 1–170. That is to say, it was 32·3 times as active. For the dysentery bacillus the activity of cyllin 1–850 was equal to that of phenol 1–84.

Hartigan[2] warmly recommends cyllin as an efficient intestinal antiseptic in **Sprue.** The dose he uses is 3 mins. put up in gelatin capsules. Of these one may be given every second hour, but as a rule not more than eight a day are required, and this number may be rapidly

reduced to two or three a day The stools rapidly diminish in number, losing their frothy character and becoming bile-stained. The offensive odour takes longer to disappear.

Klein[3] finds that "cyllin inhalant" exerts a powerful germicidal action on the staphylococcus pyogenes aureus. Inoculated surface agar-plates were exposed to the action of the inhalant in a Bullock chamber for ten minutes, and thereafter were left with the residual cyllin air in the closed chamber for one hour. On being removed no culture grew. He subsequently[4] tested the action on the diplococcus of pneumonia. The results show that plates inoculated with a fresh active culture of the diplococcus and exposed to the action of cyllin inhalant for five minutes, and then to the action of the residual air for one hour, show no subsequent growth.

REFERENCES.—[1]*Lancet*, June 24, 1905; [2]*Jour. Trop. Med.* March 1, 1905; [3]*Lancet*, April 15, 1905; [4]*Med. Press*, June 21, 1905.

DIGALEN.

Cloetta[1] has prepared from digitalis leaf an amorphous white substance, freely soluble in water. It is very diffusible and is non-irritating. Dissolved in water with the addition of 25 per cent glycerin, this substance is put upon the market under the name of digalen. The clinical value of the drug has been tested by Nannyn and Bibergell. The former used hypodermic or intravenous injections, but Bibergell preferred to give it by the mouth dissolved in wine, milk, or aerated water. The ordinary dose was 1 cc. after each meal. It does not irritate the stomach. In exceptional cases it may even be given by the rectum. It does not seem to have a cumulative action, and the effect is more rapidly produced than with digitalis.

REFERENCE.—[1]*Berl. klin. Woch.* Dec. 19, 1904.

DIGITALIS.

Johnson[1] reports a case of digitalis poisoning in which a very low temperature, 94° in the axilla, was noted. The only other symptom was an attack of vomiting and diarrhœa, which did not recur. There was no air hunger, sweating, or weak, thready pulse.

REFERENCE.—[1]*New York Med. Jour.* May 19, 1905.

DIURETIN.

Torchio[1], from careful comparative experiments with diuretin and agurin, concludes that there is no essential difference in action, but merely in degree, both acting on urinary secretion, increasing the filtration of water, and often also the elimination of urea and salts. Diuretin is a more powerful diuretic. The increase in secretion is rapidly produced, but does not last long after the drug is stopped. A true cardiac and vasomotor action is not produced; the arterial tension often falls, so that the diuretic action must be due to a direct action on the renal epithelium. Both drugs do good in **Bright's Disease**, except where the renal epithelium is profoundly altered or the

heart is incapable of responding to tonic treatment. Agurin is more successful in kidney conditions than diuretin. Both drugs are indicated for **Mitral Disease** when compensation has broken down, but they are useless in aortic disease.

Reference.—[1]*Brit. Med. Jour.* Oct. 22, 1904.

ECHINACEA ANGUSTIFOLIA.

This drug is the narrow-leaved purple cone flower commonly known as Black Sampson. Ellingwood[1] makes large claims for it. He finds it has a direct influence in correcting those depravations of the body fluids which depend upon organic causes. The classification of the remedy as an alterative or antiseptic is too narrow. Its field covers the entire range of organic infection. **Blood Poisoning** in all its forms is more promptly met by this remedy than by any other combination of drugs. It is useful in acute and chronic auto-infections, acute septic infection, pyæmia, slow progressive blood taints, and all faults of the blood arising from imperfect elimination. Ellingwood mentions more particularly **Septicæmia,** septic fever, and pyæmia as conditions in which the remedy acts as a powerful stimulant on the nerve centres, and also it would appear to antagonize the direct results of the infection. Similarly it is useful in infection from the bite or stings of venomous snakes or insects. It should be applied locally and also given internally in these conditions. In **Uræmia** this wonderful drug is satisfactory. Although it does not restore the action of the kidneys as promptly as other remedies, it very materially accelerates the influence of those other remedies. In **Diphtheria,** though a valuable remedial agent, its good effects are not quite so pronounced as in other conditions, but even here, after the membranes have been entirely removed, the influence of echinacea upon those conditions of the blood disorder which depend upon the absorption of the toxins is satisfactory. Unfortunately, no cases illustrating the action of the remedy are described, nor are any details given as to dose and preparations.

Reference.—[1]*Ther. Gaz.* May, 1905.

ELATERIUM.

Sewall[1] states that elaterium has an effect on the absorption of dropsical effusion independent of its power of producing purgation. He suggests that cathartic action may begin with accelerated absorption in the systemic capillaries, leading to increased blood-pressure and lowered specific gravity of the blood, and that increased diuresis with intestinal flux and purgation are later links in the chain of circumstances. In support of this contention, he mentions several cases in which small repeated doses of elaterium caused the sudden disappearance of large **Dropsical Effusions,** without increase to a marked degree of either the urine or fæcal matter. For this effect the elaterium may be given in doses of $\frac{1}{10}$ grain every hour, till there is nausea or the bowels begin to act. In other cases the drug was used in doses of $\frac{1}{16}$ to $\frac{1}{8}$ gr. three times in the day, till after a longer or shorter time nausea was produced. The action of elaterium is to some extent cumulative, since one or

two small doses daily may finally produce a physiological effect or give rise to intolerance. The drug may appropriately be used in most cases of **Œdema,** barring those in which there is a tendency to enteritis. If one attempts to obtain therapeutic results without inducing nausea or griping, elaterium will be found irregular and somewhat unreliable in its action. Possibly better results may follow further use of elaterium.

Reference.—[1]*Ther. Gaz.* Nov. 1904.

EMETINE AND CEPHAELINE.

Zepf[1] has investigated the effects of these two alkaloids of ipecacuanha root. The action was tested after oral and rectal administration. The emetine was dissolved to form a one per cent solution; of this the average dose was five or six drops. The chief action seemed less an expectorant than a headache- and nausea-producing effect. In tubercular cases the expectorant effect was not marked, the lung condition remained unchanged, and there was no alteration in the bacilli. Neither alkaloid produced diarrhœa when given by the mouth. They could be given in large quantities by the rectum without causing vomiting. The action of the two alkaloids is similar in type, but cephaeline is the more active and is more apt to cause vomiting. Locally both alkaloids have an irritant action. During their administration they frequently give rise to headache, and impair digestion and appetite. Given by the mouth they exert a feeble expectorant action. Local application of fluid preparations of the root by inhalation or gargle are far more efficient, and are cheaper than similar applications of alkaloidal solutions.

Reference.—[1]*Arch. Inter. de Pharm. et Ther.* Vol. xii. facic. v. and vi; *Brit. Med. Jour.* Feb. 4, 1905.

ERGOT.

Sollman and Brown[1] have investigated the action of intravenous injections of ergot on the circulation of the dog. They find that the injection causes an immediate fall, followed by a prompt recovery and usually a slight brief rise. The volume of the organs varies with the blood-pressure, and the latter is dependent chiefly on cardiac action, as there is no evidence of vasoconstriction. The authors conclude that the drug is not a suitable one for modifying the general circulation. Of course the effect in man may be different from that in dogs.

Vahlen[2] has isolated an active substance from ergot which is soluble in water. He gives it the name of Clavin, and states that it produces active uterine contractions, but causes neither gangrene nor convulsions.

References.—[1]*Jour. Amer. Med. Assoc.* July 22, 1905; [2]*Deut. Med. Woch.* No. 32, 1905.

ETHER.

Gröndahl[1] examined the urine of 76 patients after they had been subjected to fairly protracted ether narcosis, and found that in 27 cases the urine contained albumin, and in 24 instances casts as well. In

about half these cases the albumin appeared within the first twenty-four hours after operation, and in the remaining cases within two or three days. It lasted as a rule a few days. Age, anæmia, and cardiac impairment seem to be predisposing factors. Children showed a relatively large proportion of positive results. The author considers that the condition points to a toxic nephritis, but that the damage to the renal epithelium is transient. The effect of chloroform on the kidney is more pronounced than that of ether.

REFERENCE.—[1]*Norsk. Mag. f. Lagevidenskaben*, No. 5, 1905.

ETHYL CHLORIDE.

Meyer[1] recommends the use of an ethyl chloride spray as an easy method of treating **Sycosis,** which does away with the necessity of epilating. The ethyl chloride is sprayed on the pustules till they turn white. The parts are then left exposed for the secretion to dry and form a crust, but at night a compress of corrosive sublimate is applied. The ethyl chloride is used twice every week.

An identical procedure is used by Schein[2] for **Condylomata Acuminata.** The surrounding healthy tissues are protected with gauze, and the condylomata are thoroughly frozen, special attention being directed to the bases. After a single treatment the vessels thrombose, the growths turn livid, shrink, and in the course of a few days separate.

Brix[3] has repeatedly seen incarcerated hernia spontaneously go back or be reduced with slight pressure after spraying on ethyl chloride.

REFERENCES.—[1]*Med. Klin.* Feb. 5, 1905 ; [2]*Wien. klin. Woch.* Feb. 2, 1905 ; [3]*Deut. Med. Woch.* No. 27, 1905.

EUCAINE.

Lange[1] recommends the direct injection of large quantities, 70 to 100 cc., of a 1% solution of eucaine near the sciatic nerve in **Sciatica.** The needle is pushed in till jerking of the leg shows that the nerve has been reached.

REFERENCE.—[1]*Münch. Med. Woch.* No. 52, 1904.

EUCAINE LACTATE.

This drug is said to be preferable to cocaine for producing **Local Anæsthesia** of mucous membranes. It is more soluble than eucaine hydrochloride, and in the strength of 10 per cent to 15 per cent is well adapted for rhinological, otological, and laryngeal purposes. Meyer[1] denies that eucaine lactate has any anæsthetic action on the larynx. Langgard[2] states that the solutions of the lactate are non-irritating and produce no effect on the vessels when applied locally. If a constringing effect is desired, the eucaine salt should be combined with adrenalin. The strengths of eucaine lactate suggested are as follows. For ophthalmic work, 2 to 3 per cent ; in dentistry, 2 to 3 per cent ; for infiltration purposes, 0·12 per cent ; for regional anæsthesia, 2·5 per cent solution ; and for nose, throat, and ear work. 10 to 15 per cent.

REFERENCES.—[1]*Ther. Monats.* May, 1905 ; [2]*Ther. Monats.*

EUMYDRIN.

This name has been given to an atropine derivative. Chemically it is atropine methyl nitrate. It is claimed that the preparation has a purely peripheral action without any central toxic effect, and as such it has been recommended as a substitute for atropine in ophthalmic work and in the night sweating of phthisis.[1] Haas[2] found it effective in the treatment of diseases of the stomach and intestines. The indications for eumydrin are the same as for atropine or belladonna preparations. In his experience patients who developed symptoms of poisoning after taking belladonna, could use eumydrin for long periods without any discomfort.

Hagen[3] is also an enthusiastic supporter of eumydrin in gastro-intestinal disease. He states that vomiting, either of a reflex nature or due to organic changes, is promptly relieved by the oral administration of eumydrin. Subcutaneous injection is not so successful, but the latter method is indicated for **Hepatic Colic, Appendicitis,** and **Paralytic Obstruction** from intestinal atony; in all of which conditions eumydrin gives excellent results.

Jonas[4] tested the action as an anhydrotic in 30 cases of **Phthisis.** The initial dose was 1 mgram at bedtime. If the sweating also occurred during the daytime a similar dose was given in the morning. In obstinate cases the evening dose was raised to 2 or even 3 mgrams, though the latter amount should only be continued for a short period. Five of the cases failed to react, but all the remaining patients improved. In 7 of them 1 mgram was sufficient, while a further 13 required 2 mgrams, and the remaining five only reacted when the dose was raised to 3 mgrams; but in many instances these larger doses could be gradually reduced. The only toxic action noted was slight dryness of the throat. There was never cerebral stimulation.

REFERENCES.—[1]*Wien. klin. Woch.* No. 4, 1905; [2]*Ther. d. Gegenw.* March, 1905; [3]*Heilkunde,* Jan. 1905; [4]*Wien. klin. Woch.* No. 4, 1905.

EXODIN.

Exodin is a purely empirical mixture of diacetyl-rufigallic acid-tetramethyl-ether, acetyl-rufigallic acid-pentamethyl-ether, and rufigallic acid-hexamethyl-ether. It has been recommended as a **Mild Purgative.**

Ebstein[1] found that the last substance has no purgative action. The diacetyl compound has a slight purgative effect, but is inconstant in its action. The pentamethyl-ether produces marked purgation, but, at the same time, gripes; so that evidently the action of exodin depends on the mixture of these three substances. Ebstein praises the mild action of exodin, and says that where repeated doses of 1 gram to 1½ gram do not act, the best treatment is copious oil enemata.

REFERENCE.—[1]*Deut. Med. Woch.* Jan. 22, 1905; *Brit. Med. Jour.* June 10, 1905.

FIBROLYSIN.

This salt is said to be an improved form of administering thiosinamine. It is a double salt of thiosinamine and sodium salicylate, and is much more soluble than thiosinamine. It is soluble in cold

water, and is put up by Merck in small glass vessels each containing 2·3 cc. of a sterilized solution of fibrolysin. This amount constitutes a single dose, and may be injected either subcutaneously or directly into a vein or muscular tissue.

It is recommended to cause the absorption or softening of **Fibrous Adhesions** and new formations of fibrous or **Cicatricial Tissue.** A favourable action is claimed by Mendel[1] and Hirschland.[2]

References.—[1]*Ther. Monats.* No. 2, 1905; [2]*Arch. f. Ohrenh.* Bd. lxiv. p. 107.

FILIX MAS.

Stuelp[1] reports the case of a miner suffering from ankylostomiasis, in which the administration of male fern was followed by blindness. The ophthalmoscopic examination revealed swelling of the retina, distension of the veins and collapse of the arteries. On the œdema passing off numerous hæmorrhages appeared, with partial obliteration of the arteries and constriction of veins. Subsequently optic atrophy developed. The condition depends apparently on a toxic action on the retinal vessels.

Reference.—[1]*Ophth. Klin.* No. 15, 1904.

FILMARONE.

Kraft[1] has isolated an amorphous acid from the male fern. It appears to be the most active anthelmintic principle in the plant. As a rule a single dose of 10 grains is sufficient, and causes only slight colic and depression. As the new preparation is stable and definite in composition, it is likely to prove superior to the liquid extract of male fern.

Reference.—[1]*Ther. Monats.* No. 8, 1904.

FLUOROFORM.

Fluoroform is a 2 to 2½ per cent solution of fluoroform in water. It is absolutely non-toxic, and without taste or odour. Stepp[1] uses it in **Whooping Cough.** Young children receive hourly doses of one drachm, larger children up to half an ounce. The number of attacks diminishes very rapidly.

Reference.—[1]*Ther. Monats.* No. 11, 1904.

FORMAN.

This is a remedy suggested for use in **Nasal Catarrh.** Forman is a chlormethyl menthyl-ether, with the formula $C_{11}H_{21}OCl$ In contact with moist air it breaks up into menthol, formaldehyde, and a trace of hydrochloric acid. It can be applied to the nose as a watery spray or as a steam inhalation. For young children an ointment containing $33\frac{1}{3}$ per cent of forman is useful. Numerous writers recommend these preparations. Fuchs[1] has used them with benefit in **Acute and Chronic Rhinitis, Ozœna,** and in **Eczema** and **Erosions of the Nose.**

Reference.—[1]*Heilkunde,* May, 1904.

FORMIC ACID.

Formic acid has a tonic action both on unstriped and striated muscular fibres. It is thus of use in **Neurasthenia, Diabetes,** and in various forms of **Adynamia** and **Senile Weakness.** It can also be used to overcome weakness after severe exertion. Huchard[1] points out that formic acid is a **Diuretic.** It is not so powerful as diuretin, but on the other hand it diminishes the excretion of albumin, and can thus be used with advantage in the treatment of arterial and cardiac degeneration. Sodium formate is the salt commonly employed, though potassium formate may also be used. The dose is 3 grams daily. Lithium formate has a smaller dosage (1 to 1·50 grams daily). A good plan is to dissolve 10 grams sodium formate in 200 grams of syrup of bitter orange peel, and give one tablespoonful of this mixture thrice daily. This administration is kept up for ten days, when an intermission of six days takes place, after which the drug is again given.

Clement[2] states that formic acid increases the **Muscular Power.** The dose necessary to produce this effect is 2 to 3 grams per diem. As ordinary commercial formic acid is 50 per cent in strength, the amount of this required is 4 to 6 grams. It is best administered mixed with half a tumbler of water and neutralized with sodium bicarbonate. The muscular action is shown both by the increased feeling of fitness, and also by the records of the ergograph. Apparently the action extends to the smooth muscle fibres, as can be demonstrated on the bladder ; in old men formic acid renders micturition more easy, and the urine is passed with greater strength.

Couch[3] has found formic acid a marvellous remedy in **Rheumatic** conditions, and in **Arthritis Deformans.** He injects formic acid as a 2½ per cent solution just under the skin in the neighbourhood of the painful joints. A preliminary injection of 5 to 8 drops of 1 per cent cocaine solution is employed, and then an equal amount of the formic acid solution. The amount injected should not exceed 8 drops, as larger drops cause painful swellings. The injections are best made over the outer surface of the joints, and over the extensor tendons. Several areas may be injected provided that they do not come within two inches of each other. As many as thirty injections have been made, but as a rule twelve to fifteen are sufficient for one day. They should be repeated every day, or every alternate day, till pain ceases.

REFERENCES.—[1]*Répert. de Pharm.* April 10, 1905 ; [2]*Lyon Méd.* No. 8, 1905 ; [3]*Med. Rec.* June 24, 1905.

GELATIN.

Landmann[1] points out that there is no antagonism between the actions of gelatin and leech extract on the blood. During the period in which the leech extract affects the blood, no true clotting can be induced by gelatin injections. After a certain proportion of gelatin is injected, the blood at ordinary room temperature becomes set, but this is due simply to the setting of the gelatin. On heating the set

blood it again becomes fluid, thus showing that no true clotting has taken place.

For gelatin solutions Landmann recommends prolonged sterilization at 115° C. in the autoclave. Merck markets a preparation of this nature which has a melting point somewhat higher than that obtained by Kaposi's method of fractional sterilization. At ordinary temperature Merck's preparation solidifies.

REFERENCE.—[1]*Mittheil. Grenzgeb. d. Med. u. Chir.* Bd. 14, Hft. 5.

GONOSAN.

This preparation is a combination of Kawa-kawa resin (*Piper methysticum*) and sandal wood oil. Kawa-kawa has long been used as an anti-gonorrhœic remedy in the Sandwich Islands. It is said to have an anæsthetic and vaso-constringing action on the urethral mucous membrane. Gonosan has recently been strongly recommended in the treatment of **Gonorrhœa.** The drug is given in capsule form, each containing 5 drops. Six to eight capsules are required daily. No disturbing influence on the stomach or kidneys has been noted. Numerous writers report in favourable terms of its action.

Zeifsl[1], Runge[2], Merzbach[3], Bloch[4], recommend it as a nearly ideal anti-gonorrhœic remedy. They state that it rapidly relieves the pain and burning on micturition, and painful erections cease.

Lavaux[5] goes even further, and points out that the pain-relieving effect is manifested also on the higher portions of the genito-urinary tract. It acts well in pyelitis.

REFERENCES.—[1]*Wien. Med. Presse,* No. 7, 1905; [2]*Münch. Med. Woch.* No. 5, 1905; [3]*Ibid*; [4]*Deut. Aerzte Ztg.* May 15, 1905; [5]*Monats. f. Harn. u. Sex. Hyg.* Nos. 4 & 5, 1905.

GRISERIN.

Griserin is a derivative of Loretin, which is rendered soluble by the addition of alkali without thereby losing its acid properties. Küster[1] writes in glowing terms of its value as an internal disinfectant which he found specially useful in diseases produced by bacilli. He mentions **Dysentery, Tuberculosis, Scarlatina, Pneumonia,** and various tropical infections, as some of the instances in which it was specially successful. The disinfecting power of griserin has, however, been adversely reported upon by a number of later writers, Petruschky[2], Schomburg[3], Dencke[4], Friedberger and Oettinger[5]. Finally, Markl and Nardini[6] point out that griserin consists of at least two substances, one of which is soluble in water, and the other almost insoluble. The disinfecting power is rather under that of carbolic acid, but it seems to have slightly more action in inhibiting growth of bacteria. It has almost no toxic action on mice. Experimenting with minimal toxic doses of diphtheria, anthrax, plague, and cholera, they show that griserin possesses neither a preventive nor a curative action.

REFERENCES.—[1]*Berl. klin. Woch.* No. 43, 1904; [2]*Ibid*, No. 50, 1904; [3]*Ibid*, No. 1, 1905; [4]*Münch. Med. Woch.* No. 3, 1905; [5]*Berl. klin. Woch* Nos. 7 & 8, 1905; [6]*Ibid*, No. 20, 1905.

GUAIAQUIN.

This preparation is the guaiacol bisulphonate of quinine. It contains 44·2 per cent of quinine, and 55 per cent of guaiacol sulphuric acid, representing 33·4 per cent of pure guaiacol. Guaiaquin is an acid salt, very soluble in water and alcohol. It has a bitter taste, but is free from the odour and caustic taste of guaiacol. It is antiseptic, but is said to have no inhibitory action on the normal digestive processes. Rau[1] recommends it as an intestinal antiseptic in **Kalazar, Malarial Cachexia,** and **Piroplasmosis,** in doses of 6 to 10 grs. thrice daily after food. It is best administered in gelatin pills. Hypodermic injections of a 10 per cent solution deep into the muscular tissue have been found useful in æstivo-autumnal and pernicious **Malaria.**

Reference.—[1]*Antiseptic,* March, 1905.

HEDONAL.

Podhoretzki[1] used a combined hedonal-chloroform narcosis. The hedonal is given in a single dose of 2 grams one hour before the operation. The patients at the time of operation are in a soporose condition. They go under chloroform rapidly, requiring smaller quantities of the anæsthetic. The excitement stage is absent, and there is a diminished tendency to vomit.

Reference.—[1]*Deut. Med. Woch.* No. 50, 1904.

HELMITOL.

This preparation is a compound of formaldehyde with anhydrous methylene-citric acid, and even in the presence of alkaline solutions, liberates large amounts of formalin. It gives good results, according to Keleman[1], in **Cystitis,** whether due to gonorrhœal infection, to enlarged prostate, or stricture. It acts as a **Disinfectant** and **Diuretic,** while it also possesses sedative qualities. It has no specific action on gonococci, but disinfects the urine by rendering it acid. At the same time it tends to localize the inflammatory process, so that by a combination of helmitol internally with local treatment, gonorrhœal cystitis is readily cured. The drug is obtainable in compressed tablets.

Steinbüchel[2], after an extended trial of helmitol, comes to the following conclusions: The internal use of helmitol increases diuresis without damaging the kidneys or irritating the gastro-intestinal tract. A local injection of 1 per cent helmitol solution may be used instead of boric acid, for washing out the bladder before a cystoscopic examination, but presents no marked superiority over boric acid. The internal use is indicated for acute and chronic cystitis and pyelitis. For chronic cases of cystitis local treatment should be employed in addition. It is of value as a prophylactic before and after bladder operations, and after cystoscopic examinations. It seems to have a specific curative action in **Bacteriuria.** For these purposes the dose should be two tablets of 0·5 gram, three or four times in the day.

Nicolaier[3] points out that the drug is a compound of methylene-citric acid, and urotropin. Methylene-citric acid does not give off

formaldehyde in the urine, while it is somewhat irritating to the stomach and may produce skin eruptions. Helmitol depends for its efficacy as a urinary antiseptic on the presence of the urotropin in it, and the new compound is not very satisfactory, as the presence of the methylene citric acid may give rise to unpleasant side effects.

Posner[4] comes to the same conclusion. Methylene-citric acid has very little disinfecting power, so that helmitol depends for its activity on the urotropin which it contains. As this forms only half of the compound, twice as large a dose is required, and thus helmitol is dearer than urotropin.

References.—[1]*Heilkunde,* May, 1904, *Brit. Med. Jour.* June 25, 1904; [2]*Wien. Med. Presse,* No. 5, 1905; [3]*Deut. Arch. klin. Med.* Nos. 1 & 2, 1904; [4]*Berl. klin. Woch.* No. 2, 1905.

HEROIN.

Helbich[1] recommends heroin as a sedative in **Hæmoptysis** with much coughing. He finds it also useful in **Asthma,** and for allaying the pain in **Pleurisy.** He has not noticed any hypnotic action, and states that it has not the least effect on the night sweats of phthisis.

Atwood[2] reports a case of heroin habit. The condition was similar to that induced by the opium habit, but less severe in degree. The abstinence symptoms on withdrawal of the drug resemble those in the morphine habitué. The patient, a neurotic woman 29 years of age, was taking from 2½ to 4 grs. of heroin per diem in divided doses hypodermically. She was affected in her general health, was thin and debilitated, and could not eat or digest her food. She was sleepless, and could do nothing without resorting to the drug. Heroin was immediately cut off, but this produced severe diarrhœa and colic, so that an occasional dose of heroin was given. At night she was given mild hypnotics, and made a good recovery.

References.—[1]*Wien. Med. Presse,* No. 52, 1904; [2]*Med. Rec.* June 3, 1905.

HETRALIN.

Ebstein[1] finds this urotropin compound a good **Urinary Antiseptic.** Its chemical composition is dioxy-benzol-hexamethylen-tetramin. It is a white powder, freely soluble in water. The solution is stable, and has a very sweet taste and a not unpleasant odour. The drug is put up in tablet form, each tablet containing ½ gram. The ordinary dose is one tablet thrice daily. It is capable of performing the same services as urotropin, and occasionally acts when urotropin is useless. It rapidly clears up and acidifies the urine in **Cystitis,** but does not seem to have much action in tuberculous disease of the kidneys and bladder.

Reference.—[1]*Deut. Med. Woch.* Aug. 25, 1904, *Brit. Med. Jour.* Oct. 29, 1904.

HYDRASTIS.

Stewart[1] recommends this drug in catarrhal and subacute **Dyspepsia** where there is no organic impairment of the mucous membrane. The dose is from one to six drops of the fluid extract in water, one hour

before meals, and at bedtime. The glycerinum hydrastis may be used locally in **Vaginitis** and some forms of **Leucorrhœa**, but only after the acute stages have passed off, as it acts best in subacute and chronic conditions. The glycerite diluted 1 in 3 or 4 parts of water is useful for spraying the nose in chronic nasal catarrh. As a rule hydrastis gives better results when used in small doses, frequently repeated, than in large infrequent doses. Hydrastininæ hydrochlor. in doses of from $\frac{1}{4}$ to 1 gr. is an excellent remedy for controlling **Menorrhagia.** Its action is somewhat slower than ergot, but is more prolonged. In pregnant women it must only be used with caution, as it sometimes brings on abortion.

REFERENCE.—[1]*Jour. Amer. Med. Assoc.* Nov. 5, 1904.

ICE.

Aurness[1] uses the following method of treating **Pneumonia.** The area of lung involved is carefully outlined, and one or more specially made ice-bags are applied to it, filled with crushed ice. Each bag is covered with thin gauze, and a drainage tube is so arranged that all the water formed from the melting ice is immediately drained off. He considers this of importance, as it allows the uniform heat-absorbing power of the melting ice to be fully utilized. The application of the ice is continuous unless there appear signs of collapse, when it is withdrawn and stimulation is carried on.

Fielden[2] discusses the pharmacology of ice. When ice is applied over a deep-seated lesion, as **Pneumonia** or **Abdominal Inflammation,** he holds that it acts as a counter-irritant. It has no direct constricting effect on the deeper vessels, but, by means of a reflex action through the vasomotor mechanism, the vessels in the deeper organs are affected. When applied to the skin ice causes a constriction of the vessels in the skin, and also probably a similar change in the vessels of the deeper-lying organs innervated by the same spinal segment. When it is used for the abstraction of heat, as in cases of **Hyperpyrexia,** there is probably also an effect of a reflex nature produced on the heat centres, in addition to the mere abstraction of heat. This explains why the lowering of temperature is prolonged If the action were simply that of abstraction of heat, the diminution of temperature would merely be temporary, whereas in some cases it is of a permanent character. Where the hyperpyrexia remains, or even becomes increased, this may be due to the heat centres being so damaged by the disease that they again give way under the strain.

REFERENCES.—[1]*Jour. Amer. Med. Assoc.* June 3, 1905; [2]*Brit. Med. Jour.* June 10, 1905.

INTRAMUSCULAR INJECTION.

Meltzer and Auer[1] show that intramuscular injections of soluble drugs directly into the belly of a muscle are so rapidly absorbed that the effect resembles in value that of direct intravenous injection. After such intramuscular injection the drug is first deposited among

the muscle fibres, and then carried to the blood by some process of rapid absorption. The difference between the absorption from a muscle and from the subcutaneous tissue is one of degree, and not of kind. From the muscle larger quantities are absorbed, and with greater speed.

REFERENCE.—[1] *Jour. Exper. Med.* Feb. 25, 1905.

IODIC ACID.

Mackie[1] finds that calcium iodate is an excellent antiseptic, capable of replacing iodoform for almost every purpose. It may be used as a fine powder to **Cicatrizing Surfaces** and **Septic Wounds** of all descriptions. An ointment containing 10 grs. to the ounce of vaselin or other non-oxidizable basis is an excellent application for ulcers of the leg. A 3 per cent gauze makes an efficient dressing for operation wounds, while a warm saturated solution may be used for irrigation purposes. He has used it as a vaginal douche, when it has an **Astringent, Deodorant, Antiseptic** action. It is extremely useful for washing out the bladder. An ointment of 10 grs. to the ounce is almost a specific for **Eczema Capitis** of children. Internally it is an efficient intestinal antiseptic, but Mackie now prefers iodic acid for intestinal antisepsis.

Iodic acid is too irritating to be used as a dusting powder, but in dilute watery solutions it acts as a strong inhibitor of fermentation, and checks the growth of micro-organisms. In addition to its antiseptic powers, it possesses remarkable properties as a **Deodorant.** It is more powerful in this respect than permanganate of potassium, and has the additional advantage of not staining the tissues. A solution of 1–500 has been found suitable for deodorizing **Putrid Wounds, Ozæna,** and **Offensive Urine.** The same strength makes an excellent mouth-wash, and is remarkably efficient as a vaginal wash in fœtid cancerous growths.

The iodate of zinc possesses similar properties. It may be used where a stronger action is required, as it is more soluble than the calcium salt. The subiodate of bismuth gave good results in a few cases of **Lupus,** and is useful as a dusting powder for **Tuberculous Lesions.** Lastly, mercuric iodate is an antiseptic suitable for general use. It is soluble to the extent of 2 per cent in water, and is less corrosive on instruments than perchloride of mercury. The action on instruments is more of an oxidizing nature, and any deposit formed is readily wiped off.

REFERENCE.—[1] *Lancet,* Jan. 21, 1905.

IODIDES.

Brunson[1] prefers the iodide of sodium to the iodide of potassium for internal administration. He thinks that the potassium salt is more apt to cause gastric intolerance, which is remarkably rare when the sodium salt is used.

Hühner[2] lays down the following general principles for the administration of iodide of potassium :—

1. For therapeutic purposes the drug should be well diluted, and, if possible, never given on an empty stomach. The best diluting

substance is milk, which conceals the taste and prevents to a great degree the unpleasant after-effects.

2. The preparation used must be pure. Many of the bad effects complained of are due to an impure preparation.

3. During the administration of iodides, the skin should be kept strictly clean by frequent bathing, as this prevents the decomposition of the iodide by the fatty acids of decomposing sweat, thus to a great extent avoiding skin eruptions.

Potassium iodide is incompatible with alkaloids and most metallic salts. Owing to its irritating action on the bronchial mucous membrane it should never be given when there is phthisis, or even a suspicion of a tendency to phthisis.

For children the drug is best given well diluted and in small doses frequently repeated. A convenient method for very young children is to tell the nurse how much of the drug is to be taken in the twenty-four hours. This quantity is then made up to twenty-four teaspoonfuls with water. One teaspoonful is given the child every hour while awake, and two or three teaspoonfuls on awaking from a sleep of two or three hours.

References.—[1]*Amer. Med.* May 14, 1904; [2]*Med. Rec.* April 1, 1905.

IODINE.

Müller and Inada[1] have investigated the action of iodides in **Arteriosclerosis.** Their conclusion is that iodine exerts a favourable influence, not as is commonly held, by acting on the vessel walls, but by rendering the blood less viscous. The blood is thus more fluid, which enables an efficient circulation to be more readily carried out.

Reference.—[1]*Deut. Med. Woch.* No. 48, 1904.

IODOFORM.

Iodoform, in pill form, is recommended as better than iodides or salicylates in sluggish, subacute, **Articular Rheumatism.**[1] The amount given daily may run to 1½ grs.

Mann[2] uses *iodoform wax* in the treatment of tubercular **Bone Disease,** and in acute and chronic **Osteomyelitis.** The formula for the wax is sixty parts of iodoform mixed with forty parts each of spermaceti and sesame oil. This gives a mixture which melts readily, but is firm at body temperature. In using it, Mann cleans out the cavity and swabs out with carbolic acid 95 %, followed in a minute by 95 % alcohol. The melted wax is then poured in, and the wound sutured to obtain healing by first intention.

References.—[1]*Sem. Méd.* No. 51, 1904; [2]*New York Med. Jour.* July 22, 1905.

IOTHION.

Iothion is an oily liquid, di-iod-hydroxy-propan. It is only slightly soluble in water, but more so in olive oil and glycerin. It mixes in all proportions with lanolin, chloroform, alcohol, ether, and benzol. The watery solution is stable, decomposing very slowly even in the

presence of free acid. Weak alkaline solutions, corresponding to the alkalinity of the blood, readily convert the organic iodine into an inorganic form by a process of saponification. Iothion contains about 80 per cent of iodine.

Wesenberg[1] finds that iothion is readily absorbed after application to the skin. The iodine is excreted in the saliva and urine. The reaction is obtained in the excretions within an hour, and lasts for four days or so. The excretion is at its maximum during the first ten hours. After a single application from 14 to 29 per cent of iothion is excreted, but with repeated application of pure iothion or of a mixture with a fatty or alcoholic base, the proportion excreted rises to 40 per cent. Prolonged application to one place clogs up the pores and checks absorption, hence the necessity for changing the site of application frequently.

Ravasini and Hirsch[2] have made an extensive trial of the drug on a series of upward of fifty patients. They found pure iothion rather irritating, and prefer to use an ointment consisting of one part iothion to two parts each of lanolin and vaselin. In only one instance did this strength cause an unpleasant reaction, but when applied to the scrotum there is slight burning. In one instance 20 grams of this ointment caused iodism. In all cases, even after the application of very small quantities to the skin, iodine could be demonstrated in the excretions. When using the ointment the skin must be thoroughly cleansed every second or third day. Therapeutically they find that absorption of **Enlarged Inguinal Glands** after chancres is readily effected by combining the use of iothion applications and calomel injections. The results in **Lymphadenitis** after soft chancre are also good. Ten cases of chronic **Gonorrhœal Epididymitis** rapidly improved under daily applications of iothion ointment to the scrotum. In from four to eleven days the inflammatory thickening disappeared. The authors conclude that iothion is an excellent preparation for introducing iodine into the system through the skin.

Lipschütz[3] also finds from a prolonged set of experiments that after external applications to the skin, either simple painting on of pure iothion, or inunction of a mixture of iothion with an oily or fatty base, the drug is rapidly absorbed and appears soon in the excretions. The absorption takes place even if only very small quantities of the preparation are used. The excretion is also rapid, and ceases within three or four days of stopping the applications. He considers that the absorption depends on the fact that iothion is very soluble in the fatty substances normally present in the skin. As regards the therapeutic value of iothion, he has only had two failures out of thirty cases of **Tertiary Syphilis** treated exclusively with iothion. He employs fairly large doses, not less than two nor more than five cc. This amount was painted on. The time necessary for this was as a rule from three to five minutes. The number of applications varied in the individual cases from ten to thirty-five. About one-third of the patients treated showed slight signs of iodism, as a rule consisting only of nasal catarrh.

In no case was there disturbance of the gastro-intestinal canal or of the respiratory tract. In one case an erythema developed, with subsequent pigmentation. There was no sign of iodism, and Lipschütz is not certain that the erythema was caused by the iothion. In about one-third of the cases a complaint of burning and itching in the skin was made. This does not come on immediately on the application of the preparation, but about 15 to 30 minutes afterwards, and Lipschütz considers that it is in some way connected with the actual passage of the drug through the skin. His general summing up is that in iothion we possess a drug which is very suitable for local treatment with iodine, while it is also useful when there is difficulty in swallowing, as in stenosis, or in stuporose conditions, e.g., meningitis.

Dreser [1] shows that iothion is not a good form to administer iodine internally, either by the mouth or subcutaneously. It is solely suited for percutaneous administration.

REFERENCES.—[1]*Ther. Monats.* No. 4, 1905; [2]*Arch. Derm. u. Syph.* Bd. lxxiv. Hft. 2 & 3; [3]*Ibid.* lxxiv. Hft. 2 & 3; [4]*Berl. klin. Woch.* No. 23, 1905.

IRON.

Tribot and Chrétien [1] by means of an electro-dialytic process, have produced a new colloidal form of ferric hydrate, which is an improvement on ordinary dialysed iron, in that it contains less ferric chloride, while it possesses to a greater extent the power of converting albumin into albumose.

REFERENCE.—[1]*Lancet*, May 20, 1905.

ISOFORM.

Iodoform owes its antiseptic action to the formation of di-iodo-acetylide, and not to the mere splitting off of iodine. Rochmann [1] has investigated the antiseptic action of a number of bodies which contain the complex $=C=CI$. Di-iodo-tyrol, tri-iodo-tyrol, and di-iodo-cinnimate ethyl-ester, were found to have no antiseptic action. The iodo combination of phenol and cresol-ether, as found in para-iodo-anisol, proved highly efficient. Under the name of Isoform it has been introduced into use as a potent bactericide. It is insoluble in ether and alcohol, and only slightly soluble in water. It does not irritate the skin, and its toxicity is very feeble, so that human beings can take 2 to 4 grams daily without any ill effects. It has a slight action on the intestinal bacteria, but is probably too insoluble to prove of much use as an intestinal antiseptic. It is well suited for applying to wounds as a powder or in impregnated gauze.

Heile [2], contrasting the disinfecting power of isoform with corrosive sublimate and iodoform, states that isoform acts as an antiseptic under all conditions, whereas iodoform only exerts an antiseptic action in the presence of reducing agents, and where air is excluded. A one per cent solution of isoform checks bacterial growth more efficiently than a similar solution of perchloride. In the intestinal canal isoform exerts

a similar inhibiting property, and as it is not toxic, it can be used as an intestinal antiseptic in **Dysentery, Typhoid,** and **Ulcerating Intestinal Tumours.**

REFERENCES.—[1]*Berl. klin. Woch.* Feb. 27, 1905, *Brit. Med. Jour.* June 17, 1905; [2]*Volkmann's Samml. klin. Vortr.* No. 388; chir. No. 107.

ISOPRAL.

Foerster[1] has discovered a new method of administering isopral. He states that after inunction of the following mixture a hypnotic action was observed in one-third of 38 cases thus treated, while in another 25 per cent a slight sedative action was obtained. The mixture used consisted of 30 parts of isopral mixed with 10 parts each of absolute alcohol and castor oil. Of this mixture a quantity representing 1 to 5 grams of isopral was rubbed into the upper arm or upper part of the thigh. The rubbing was not carried on very far, and the part was then covered with gutta-percha tissue. No irritation of the skin was observed even in cases where the application was made on several successive nights to the same place.

REFERENCE.—[1]*Münch. Med. Woch.* 1905, No. 20.

JEQUIRITOL.

Hummelsheim[1] restricts the use of jequiritol to old cases of **Pannus.** Its action is uncertain in acute pannus, and quite negative on trachoma bodies in the mucous membrane.

REFERENCE.—[1]*Ophth. Klin.* No. 15, 1904.

KEFIR.

Hirsch[1] claims that kefir has a curative action in **Whooping Cough.** It has a **Diuretic** action, and is also somewhat of a **Narcotic.** During the preparation of kefir the symbiotic organism in its development kills off all other organisms in the milk, so that it is conceivable that the finished product, kefir, may have a similar bactericidal action on the organisms causing whooping cough. The diuretic action of kefir makes it of use in **Nephritis.**

REFERENCE.—[1]*Ther. Monats.* Feb, 1905.

LACTOGOL.

This is a preparation made from cotton seeds, which is stated by Goldmann[1] to have a powerful action in increasing the **Secretion of the Mammary Glands.** He has used it with success in several cases where the mother's milk had begun to fail. The dose was four teaspoonfuls in the day. He has never known it to produce any unpleasant side action.

REFERENCE.—[1]*Ther. Monats.* July, 1904.

LENTIN.

This drug (metaphenylendiamin) is recommended by Boye[1] in the treatment of **Diarrhœas of Infants** and of older nurslings. For children the dose is $\frac{1}{10}$ gr. one or more times daily. For adults the dose is from

1½ to 4½ grs. thrice daily. The urine of patients suffering from diarrhœa is darkened on taking this drug. The urine of healthy people does not show this change.

REFERENCE.—[1]*Centr. f. klin. Med.* Jan. 28, 1905.

LUMBAR PUNCTURE.

Lenhartz[1] recommends repeated lumbar puncture in **Cerebrospinal Meningitis** (*See* MENINGITIS, CEREBROSPINAL). Not more than 30 cc. of fluid should be withdrawn at one time as a rule, while in no case should more than 50 cc. be taken.

Tobler[2] considers that with proper precautions lumbar puncture is without danger in children. The child should be lying on its side, and must be kept still. The fluid should not be rapidly drawn off, and the withdrawal should be immediately stopped if there is sudden alteration of the pulse, vomiting, pallor, or pupillary symptoms. Lumbar puncture is useless in tubercular and ordinary purulent meningitis, but is often useful in cerebrospinal meningitis. In chronic hydrocephalus puncture occasionally causes transient improvement, but never leads to permanent cure; but it should always be tried where **Hydrocephalus** results from meningitis, and in post-meningitic idiocy. If there is a suspicion of tumour, puncturing is not advisable, as the removal of fluid may be followed by alarming symptoms of irritation.

REFERENCES.—[1]*Münch. Med. Woch.* No. 12, 1905; [2]*Cor.-Blatt. f. schweiz. Aerzte*, No. 7, 1905.

LYSOL.

Burger[1], while using lysol as an intestinal antiseptic in cases of **Anæmia**, noticed that the drug produces a marked stimulation of the **Appetite.** It seems to produce no irritation either of the stomach or kidneys. For children of 2 to 4 years, the daily dose may be given as 10 to 15 minims; for older children as much as thirty drops may be given. The author prescribes lysol in pill form. Five cc. of lysol is made into a mass with powdered liquorice juice, and then divided into 50 pills, of which one is given every hour or every second hour. When there is much diarrhœa ext. opii may be added.

REFERENCE.—[1]*Münch. Med. Woch.* No. 9, 1905.

MAGNESIUM SULPHATE.

Carlton[1] recommends the following formula for effectively concealing the nauseous taste of Epsom salts.

LIQUOR MAGNESIUM SULPHATIS COMPOSITUS.

R Magnesii sulphatis	℥xxxij	1000·0	Alcohol	℥ij	60·0
Tinc. cardamomi comp.	℥j	30·0	Glycerin	℥ij	60·0
Vanillin	gr. xx	1·5	Coffee, roasted and ground	℥ij	60·0
Saccharin	℥ij-iv	8-16·0	Aquæ. q. s. ad.	½ gallon	2000·0

Stir the ground coffee in one-half gallon of boiling hot water, and allow it to stand for ten to twenty minutes. While this is still hot add enough of it to the magnesium sulphate to make about three and one-half pints. Dissolve the vanillin in the alcohol, add the glycerin

to it, and then the cardamom. When the first solution has cooled somewhat add the second mixture to it. After shaking thoroughly add the saccharin and enough of the coffee infusion to make one-half gallon. Finally filter through a covered filter.

An ounce of this solution contains half an ounce of magnesium sulphate. This solution keeps well, has a dark, whisky-like colour, a nutty odour, and is easy to take, warm or cold. It is diluted with double its volume of water at the time of administration.

Reference.—[1]*Med. News*, Oct. 8, 1904.

MALACHITE GREEN.

Wendelstadt, in a paper published in the *Deut. Med. Woch.*[1] states that he has found malachite green the most useful drug to use in **Nagana-trypanosomiasis of Rats.** Rats treated with it lived as long as 41 days, whereas without treatment they succumbed in five to six days. The dose employed was 1 cc. of a solution of 1 part malachite green in 2000 parts normal saline. After the injection the parasites disappeared from the blood in 48 hours, but after some days they reappeared, and death ensued without any large number being present. As several different bodies are known as malachite green, it may be as well to note that the preparation employed by Wendelstadt was Merck's Anilin-Grün Malachit. cryst.

Reference.—[1]*Brit. Med. Jour.* Dec. 17, 1904.

MARETIN.

Maretin, or carbamic-acid-meta-tolyl-hydrazide, is a white crystalline powder, melting at 183-184° F. It is almost insoluble in cold water, but dissolves in fifty parts of hot water. It is usually given in doses of 4 to 7½ grains, and is said to be a reliable **Antipyretic.**

It has been specially recommended for the reduction of the **Fever of Phthisis.** The fall of temperature is gradual, and there is almost no cyanosis or collapse. Thus Henrich[1] finds that as a rule a dose of 4 grains twice daily keeps a phthisical temperature within a moderate range. In some instances this dose had to be doubled. When the fever is high, at first the use of maretin is attended with considerable sweating, but this action wears off with continued use, and can be checked by the simultaneous exhibition of anhydrotics.

Ulrich[2] has used the drug in febrile conditions of various origin. He finds that though the fever is reduced there is considerable sweating, and he has occasionally noted slight cyanosis. He observed in a case of **Rheumatic Fever** that in addition to the antipyretic action, the drug seemed to exert a specific action, cutting short the progress and course of the disease. This confirms the statement of Sobernheim[3], who was the first to discover the specific anti-rheumatic action. He tested the effect in seven cases of acute rheumatic arthritis, and found that both pain and fever were rapidly relieved. That the action was specific was shown by the fact that gonorrhœal arthritis is only temporarily relieved, whereas in rheumatic arthritis the relief is permanent. The

doses employed are small. For the first day or two, two doses of 7½ grains may be given, later 3 or 3½ grs. is sufficient, and under this treatment pain and fever cease in a few days. The only unpleasant effect noted was the occasional production of severe sweating. It is important to remember that after the exhibition of marctin the urine contains sugar-reducing bodies.

Kaupe[4], using the drug in phthisis, gives 0·5 gram three or four hours before the usual time for the temperature to rise. This amount prevents the rise altogether. A dose of 0·3 gram has a partial action ; 0·2 gram is without effect. The action lasts for 6 to 8 hours.

Barjansky[5], using doses of 4 to 5 grs., states that the temperature is safely and slowly reduced. The drug has no direct action on the pulse, but the pulse-rate falls with the temperature. Neither the respiration nor the digestion is affected. The drug is not cumulative. In one case he noticed slight temporary collapse.

References.—[1]*Ther. Monats.* No. 3, 1905 ; [2]*Heilkunde*, May, 1905 ; [3]*Deut. Med. Woch.* No. 15, 1905 ; [4]*Ibid*, June 30, 1904 ; [5]*Berl. klin. Woch.* June 6, 1904.

MERCURY.

Bunting[1] reports an interesting case, in which a boy aged three and a half years swallowed 110 cachous, each of which contained a grain of calomel. He was treated within twenty minutes, first with emetics of zinc, and later with apomorphine. The stomach was subsequently washed out with a solution of sodium bicarbonate to neutralize any free acid present, and thus prevent the conversion of the subchloride into perchloride. After the washing out, five ounces of milk were poured down the tube and retained. The child vomited once thereafter, but practically slept undisturbed for nine hours. The first movement of the bowels took place twelve hours after the calomel was taken. The motion was soft and copious, but not liquid. Four hours later a second motion consisting almost entirely of a green gelatinous mucus was passed. Thereafter the bowels acted normally.

Corrosive sublimate is recommended by Galliard[2] in **Acute Gonorrhœal Arthritis** of the knee. He punctures the joint, and washes it out with 1-4000 solution. Twenty cc. are injected at a time and allowed to flow out. This procedure is repeated till the fluid returned is quite thin. Five or six injections may be required at one sitting. The wound is then dressed, and as soon as the fluid exudation disappears massage and movement are begun.

Hernando[3] reports a case in which irrigation of an ear, of which the membrane was perforated, with 1-2000 solution of perchloride was followed by typical mercurial poisoning (stomatitis, diarrhœa, etc.).

Joseph[4] reports a remarkable instance of **Mercurial Eruption**, which he thinks was due to the use of an amalgam for stopping carious teeth. The patient had previously suffered from a similar eruption when using blue ointment for pediculi pubis.

Asch[5] reports five cases which demonstrate the danger of injecting strong solutions of corrosive sublimate in the attempt to abort

gonorrhœa. The strength of the solution was usually 1–1000; in one instance 1–500. The result was swelling of the penis and great pain on micturition, while cystoscopic examination showed extensive inflammation of Littré's glands and crypts of Morgagni.

References.—[1]*Lancet*, Nov. 26, 1904; [2]*Bull. et Mem d. l. Soc. Méd. des Hôp. de Paris*, March 23, 1905; [3]*El Siglo Med.* Feb. 25, 1905; [4]*Derm. Centr.* viii. No. 1; [5]*Münch. Med. Woch.* No. 25, 1905.

MESOTAN.

Burnet[1] has employed this salicyl preparation in a large number of cases. He finds that it gives almost uniform success in cases of **Muscular Rheumatism.** The pain of acute articular rheumatism is relieved by painting on a mixture of equal parts of mesotan and olive oil. In **Chronic Articular Rheumatism** and in **Arthritis Deformans,** temporary relief follows mesotan inunctions. The olive oil mixture is an excellent external application for **Rheumatic Sore Throats,** painted over the front of the throat. In **Sciatica,** mesotan is only of use if the condition depends on a rheumatic basis. It was of no use in cases of pleurisy, facial neuralgia, or in gonorrhœal arthritis. Burnet considers that the eruption and cutaneous irritation sometimes caused by the application of mesotan can be avoided by paying attention to the following points. It should be used diluted with an equal amount of olive oil. The bottle in which it is contained must be quite dry, as water decomposes the mesotan. Similarly the skin before applying the remedy must be dried with a towel to remove moisture. It is not good practice to cover the site of application with any impervious material which prevents evaporation of sweat. The mesotan is absorbed if only painted over the skin.

Tirard[2] found that mesotan applications seem to afford relief in the after-treatment of acute rheumatism. During the continuance of the fever it was of no use, but after the fall of temperature many patients state that the application of mesotan rapidly removes the sense of pain and stiffness in the joints.

Kieffer[3] finds that in addition to the ordinary olive oil mixture, containing equal parts of oil and mesotan, greater dilutions, e.g., 20 per cent, are effective and more economical For those patients who object to the odour of olive oil, cotton seed oil may be substituted. For sharp nerve or inflammatory pains the pure drug is preferable. For dull aching pains, as in subacute muscular or aponeurotic rheumatism, Kieffer believes that the weaker solutions are most intense and prolonged in action. He has treated several cases of **Rheumatic Fever** with mesotan alone, and the results were fairly good. In two cases it seemed to cut short the attack; in other cases it controlled the joint pains well, and this was especially well seen where there was involvement of the vertebral and costal articulations. In subacute and chronic rheumatism, and in rheumatism of the fasciæ, muscles, or aponeurosis, the drug has a favourable action. He has also used mesotan in several cases of acute **Gonorrhœal Epididymitis** and **Orchitis.** The whole scrotum was painted with the pure drug in full strength.

The effect in giving prompt and lasting relief from the pain was remarkably good, but the course of the disease was not otherwise affected.

Ruhemann [4] recommended diluting the mesotan with vaselin instead of olive oil. A suitable formula is 5 parts mesotan to 15 parts of yellow vaselin. This preparation can be energetically *rubbed* into the skin without producing any reaction. This author claims that mesotan exerts a beneficial action on **Erysipelas.** The same claim is made by Rahn [5].

Couper [6] reports a case of **Erythematous Eruption** which followed the gentle application of a mixture of equal parts of olive oil and mesotan to the ankle. There was no infiltration or vesication, but the burning and itchiness were intense.

Wills [7] had a more marked case in an old lady of 70, who was using mesotan applications for subacute gout. The rash came out as papules, large, hard, and pink, like lichen planus. It disappeared in a few days, but a month after the last application of mesotan a bullous rash came out on the hand and discharged large quantities of serum. There was no fever or suppuration.

References.—[1]*Lancet*, May 6, 1905; [2]*Ibid*, Jan. 14, 1905; [3]*Ther. Gaz.* March, 1905; [4]*Deut. Med. Woch.* No. 19, 1905; [5]*Allg. Med. Centr. Ztg.* No. 10, 1905; [6]*Brit. Med. Jour.* April 1, 1904; [7]*Ibid*, April 22, 1905.

METAKALIN.

Under this name a stable cresol preparation has been introduced. It is a combination of meta-cresol and soda soap. The amount of soap is sufficient to ensure ready solubility, but is not sufficient to render instruments and hands unpleasantly slippery. The disinfecting power has been tested by Wesenberg [1]. He finds that the disinfectant action of metakalin on non-sporing bacteria is more efficient than that of corresponding quantities of lysol. It is less poisonous than lysol, and its irritating properties do not appear to be so intense. Silk ligatures immersed in metakalin for some weeks showed no deleterious effect.

Reference.—[1]*Centr. f. Bakt.* Bd. 38, Hft. 5.

METHYL ALCOHOL. (*See* Alcohol, Wood.)

METHYLENE BLUE.

Allen [1] recommends the use of this drug as a local application in **Eczema** of children. A 3 to 5 per cent watery solution is applied, allowed to dry in well, and is then covered with a thin layer of collodion.

Reference.—[1]*Med. Rec.* May 20, 1905.

MUSTARD.

Heubner [1] uses mustard applications in **Bronchitis** complicating **Measles,** or **Whooping Cough.** Half a kilo of fresh mustard is mixed with 1½ litres of warm water, and stirred vigorously for ten minutes or so till a strong odour of mustard develops. A linen cloth sufficiently large to envelop the child is then wrung out of the mixture, and the

child is wrapped up and allowed to remain in it till, after 10 to 15 minutes, the reaction causes the child to become restless. The mustard cloth is then removed, and the child, after being washed, is wrapped up in a cloth wrung out of water, in which it is allowed to remain for one to two hours, so that the reaction may occur. When the child gets very red in the face, or if it begins to sweat badly, the water compress is removed, and the child is given a warm bath.

REFERENCE.—[1]*Zeits. f. Heilk.* 1905, No. 1.

NAFALAN.

Rohleder[1] describes the uses of this substance, which is extracted from a variety of naphtha found in the Caucasus. It consists of about 96 per cent of pure hydrocarbon, and 4 per cent of soap. The hydrocarbon portion is free from acids or animal and vegetable fats. Nafalan is useful for diseases of the skin affecting especially the superficial layers, where a sedative action is needed, as in **Burns** and **Eczema.** It has no action where there is marked infiltration of the skin, and is not a good antiparasitic. The sedative action is due to the production of an anæmia of the part.

REFERENCE.—[1]*Ther. Monats.* Dec. 1904, *Brit. Med. Jour.* March 11, 1905.

NEURONAL.

This new **Hypnotic** is a bromine compound of di-ethyl-acetamide. It is a greyish white, crystalline powder with a taste resembling menthol, which leaves an unpleasant after-taste. Neuronal acted well as a hypnotic in a series of forty cases representing all degrees of sleeplessness, from simple insomnia up to extreme mental excitement. It has but little toxic action. As a rule 1 to 2 grams suffice to induce sleep, even when there is mental excitement. The sleep is quiet and natural, and the patient wakes up refreshed and without headache. In doses of less than 1 gram Stroux[1] found it unreliable. Three grams were well tolerated. As neuronal contains 41 per cent of bromine, he tested it in **Epilepsy,** and found that it exercised a beneficial effect on the number of fits and on the psychic condition of the patients.

Schulze[2], after an extended trial of this drug, comes to the following conclusions. In doses of 7½ to 15 grs. it acts well in **Sleeplessness,** provided this is not due to severe pain. It has no action on headache. In **Epilepsy** the number of fits seemed to be reduced. There is no cumulative effect; in fact, after long use the action seems to be somewhat weaker. Though side-effects are sometimes noticed these are of a trivial nature and are not dangerous.

REFERENCES.—[1]*Deut. Med. Woch.* Oct. 6, 1904, *Brit. Med. Jour.* Feb. 18, 1905; [2]*Ther. d. Gegenw.* No. 1, 1905.

NITRO-GLYCERIN.

Binz[1] points out that the toxic action of this drug is much over-rated. In medicinal doses there is almost no risk of inducing poisonous symptoms. Binz states that the ordinary trochisci of commerce are unreliable, as they do not always contain the proper amount of the

drug. He recommends instead the use of an alcoholic solution, which keeps well if not exposed to light.

[The statement made by Binz points to experiments with inactive preparations of nitro-glycerin. The alcoholic solution is not very miscible with water, but one drop dose of a 1 per cent solution, on sugar, will frequently give decided physiological results, and it is safer to repeat such a dose every 10 minutes than to give several drops of the solution at one dose, so as to avoid sudden disturbance of cerebral circulation.—EDITOR *Medical Annual.*]

REFERENCE.—[1]*Ther. d. Gegenw.* Feb. 1905.

NUX VOMICA SEEDS.

Gadd[1] finds that the fat in the seeds causes difficulty in the preparation of the official liquid extract. The hairs contain proportionately more fat and less strychnine than the inner portions of the seed, and he recommends that for practical purposes the hairs be removed before making the liquid extract.

REFERENCE.—[1]*Lancet*, Oct. 1, 1904.

OLIVE OIL.

Blum[1] finds that the large amounts of olive oil recommended by Cohnheim for the treatment of **Gastric Spasm** and ulcerated conditions are not well borne by the patients. In many cases they object very much to the taste, and complain that for some hours it causes an unpleasant sense of weight in the stomach, eructations, and occasional vomiting. Some patients take the oil without any discomfort, but as a rule much smaller doses (e.g., 1 drachm) are required than Cohnheim recommended.

REFERENCE.—[1]*Wien. klin. Woch.* 1905, No. 20.

OXYGEN.

Neudorfer[1] reports a case of **Dyspnœa** arising from purulent bronchitis and a cystic substernal struma, in which attacks of excessive dyspnœa occurred which were not relieved by tracheotomy. On two occasions, when the man was apparently *in extremis*, oxygen was injected directly into the vena mediana cubiti for eight minutes at a time, and in both instances its application was successful. After four minutes infusion the pulse became more regular and strong, cyanosis disappeared, and the man regained consciousness. During the infusion there was a blowing murmur heard over the heart, but no churning or splashing noise was heard. The quantity of oxygen administered was not measured.

REFERENCE.—[1]*Wien. klin. Woch.* 1905, No. 4.

PAPAIN.

Vines[1] has investigated three samples of commercial papain, and finds that they varied widely, both in their action on fibrin and in peptolyzing activity. The samples also varied as regards the comparative activity in acid and alkaline solutions, and in their relation

to different antiseptics. These discrepancies may be due to the different methods used in preparing papain. Vines suggests that papain contains a fibrin-digesting but not peptolytic protease of the nature of pepsin, as well as a peptolytic but not fibrin-digesting protease of the nature of erepsin.

Huybertsz[2] states that tabloids made from the fresh juice of carica papaya retain their activity indefinitely. He finds the administration of one to three tabloids immediately after meals invaluable in dyspepsia.

References.—[1]*Ann. Bot.* Jan. 1905, *Lancet*, March 4, 1905 ; [2]*Jour. Ceylon Br. Brit. Med. Assoc.* 1904.

PEROXIDE OF HYDROGEN.

Baumann[1] has made an elaborate study of the effect of this preparation as a **Preservative for Milk.** The mere addition of H_2O_2 in the proportion of 0·35% reduces the number of germs in the milk to an enormous extent, and also delays the onset of coagulation for several days. The presence of free H_2O_2 can be demonstrated in the milk for several days. When the milk is kept at a temperature of 50° C. the bactericidal action of the H_2O_2 is much stronger, though it does not render all milk sterile. In the proportion of 0·35% H_2O_2 has a marked bactericidal action on the ordinary pathogenic germs which are found in milk. The digestion of the milk is rather arrested by the presence of H_2O_2, as the clots formed are of a finer consistence and less tough. To prevent undue dilution of the milk the H_2O_2 should be used in a 30% solution instead of the ordinary commercial 3%.

Reference.—[1]*Münch. Med. Woch.* No. 23, 1905.

POTASSIUM PERMANGANATE.

Rogers[1] reports a further series of five cases of **Snake-bite,** which were successfully treated by the local application of potassium permanganate. The cases were treated by various observers in different parts of India. In three instances the bite was caused by a cobra. In one case the snake was Russel's viper, the most deadly of the Indian viperine snakes. The last case was due to trimeresaurus, a very venomous snake, but probably incapable of injecting a fatal amount of venom, as the snake is comparatively small. In the other four cases it was probable that more than a fatal dose was injected, yet all the cases recovered. The treatment consisted in the immediate application of a ligature, free opening of the wounded area, and the rubbing in of crystals of potassium permanganate into the wound.

Reference.—[1]*Ind. Med. Gaz.* Feb. 1905.

PHENOLPHTHALEIN.

Various phenolphthalein products have recently been put upon the market, as purgatives which are safe and efficient. Buckley[1] finds that these products are contra-indicated in people suffering from piles, or with a predisposition to them.

Reference.—[1]*Brit. Med. Jour.* Feb. 11, 1905.

PERBORATE OF SODIUM.

Melikoff and Pisarzhevski[1] prepare this substance by adding sodium hydrate solution to hydrogen peroxide in solution till a flocculent precipitate forms. This mixture is filtered, and in the filtrate is dissolved sodium hydrate and borax. Crystals of perborate form on cooling and subsequently evaporating. The powdered perborate is stable, and keeps indefinitely if preserved dry. It contains 10·3 per cent of active oxygen, corresponding to 22 per cent of hydrogen peroxide.

Burroughs, Wellcome & Co.[2] manufacture a similar preparation. It is soluble in water, giving off nascent oxygen, the solution containing practically borax and peroxide of hydrogen. The solution is not acid and is free from irritating properties, and can be used both as an internal or local antiseptic. The dry powder may be dusted on to suppurating surfaces.

Kischencki[3] finds that the action corresponds to that of peroxide of hydrogen, but it keeps much better. The watery solution is alkaline, and is thus suitable for applying to mucous membranes which are in a catarrhal state.

Jaubert[4] also points out the stability of the dry salt. The solution of 25 grams of the salt in 1 litre of water gives an alkaline solution corresponding to a solution containing 4 or 5 volumes of peroxide of hydrogen. Stronger solutions equal in strength to the B.P. liq. hydrogenii peroxidi can be made by adding citric acid to the solution, e.g., mix 170 grams perborate with 60 grams citric acid disolved in 1 litre of water. To prepare an eighteen to twenty volume solution the quantities required are 210 grams perborate, 105 grams citric acid, and 700 cc. water.

REFERENCES.—[1]*Vratch*, Jan. 8, 1905; [2]*Lancet*, March 4, 1905; [3]*Vratch*, Jan. 8, 1905; [4]*L'Union Pharm.* 1905, No. 1, *Brit. Med. Jour.* Feb. 11, 1905.

PHOSPHORIC ACID.

Cautru[1] considers this a safe form for administering phosphorus to the tissues to replace that lost by the wear and tear of the system. Animal experiments show that phosphoric acid is innocuous. When given well diluted it rarely causes any caustic action, and this may be easily remedied by the addition of a little alkali. Its use is not advisable in advanced kidney disease, hepatic cirrhosis, gastritis, and enteritis. Remarkable results are obtained in **Neurasthenia, Hysteria, Pregnancy, Anæmia, Dyspepsia,** and in **Rheumatism** and the various cachexias.

REFERENCE.—[1]*Presse Méd.* Sept. 14, 1904.

PHYTIN.

The chief source of phosphorus in human diet appears to be the vegetable portion. In vegetables the phosphorus occurs as anhydrous oxy-methylene-di-phosphoric acid. This body contains 26 per cent of phosphorus, and forms salts with certain bases. In combination with calcium and magnesium, as a double salt, it has been introduced in the market under the name of phytin. This body contains 22·8 per

cent of phosphorus, and is thus very rich in phosphorus. Loewenheim[1] has found it of use in the treatment of **Rickets, Neurasthenia, Anæmia, Tuberculosis,** and sexual neurasthenic conditions. The drug is put up in gelatin capsules each containing a quarter of a gram of phytin. For adults the dose is four capsules in the day. Children between the ages of six and ten years receive from half a gram to one gram, while the dose for children between two and six years is 0·25 to 0·5 gram.

REFERENCE.—[1]*Berl. klin Woch.* Nov. 21, 1904, *Brit. Med. Jour.* Feb. 18, 1905.

PYRENOL.

This is the name given to a chemical combination of benzoic acid, salicylic acid, and thymol, in the form of a sodium salt. Loeb[1] states that it is a white, crystalline powder, soluble in five parts of water. In addition to its uses as an **Antipyretic, Antineuralgic,** and **Antirheumatic** remedy, it is an **Expectorant.** It limits the expectoration and acts as a sedative in asthma. It is of use in relieving the dry, hacking cough of phthisis, while he also warmly recommends it for acute and chronic bronchitis, asthma, influenza, simple pleurisy, croupous pneumonia, and bronchopneumonia. He prescribes it in the form of a solution containing 5 per cent of pyrenol. Of this the adult dose is one tablespoonful every two hours, or a teaspoonful every half-hour.

REFERENCE.—[1]*Berl. klin. Woch.* Oct. 10, 1904, *Brit. Med. Jour.* Feb. 4, 1905.

PICRIC ACID.

Lemaire[1] finds picric acid useful in **Chilblains.** He uses either a one per cent solution of picric acid or Esbach's solution. One or two applications daily relieve the itching and smarting.

REFERENCE.—[1]*Répert. d. Pharm.* 1904, p. 543.

PROTYLIN.

This substance belongs to the group of paranucleins, and is a combination of phosphorus and albumin. It is recommended by Bürger[1] in all states where there is lowered power of assimilation of food. It is useful in nervous disease and in anomalies of the bony system. Thus he has used it with benefit in the convalescence of **Typhoid Fever,** etc., in **Anæmia,** in **Neurasthenia** and **Hysteria.** Perhaps the most important group of cases are those in which the bony tissues are altered, as **Rickets** and **Osteomalacia.** In Rickets Bürger found it of great service, both for improving the bony tissues, and for increasing the bodily powers and regulating dentition.

REFERENCE.—[1]*Ther. Monats.* June, 1904, *Brit. Med. Jour.* Oct. 8, 1904.

PYRAMIDON.

Hödlmoser[1] uses pyramidon in **Typhoid Fever.** He claims that it can replace bathing. The ordinary dosage for adults was 3 grs. every three hours during the daytime. The temperature falls under profuse perspiration, but in no instance was collapse caused by the drug.

REFERENCE.—[1]*Wien. klin. Woch.* No. 5, 1905.

QUININE.

Darker[1] finds that a mixture of sulphate of quinine with one and a half times its own weight of vaselin forms a suitable mass for injecting into the flank of the abdomen. In natives he finds that a mass containing 15 to 20 grs. of quinine takes about three and a half months to absorb, during which time malarial parasites could not be detected in the children on whom he tried the mixture.

REFERENCE.—[1]*Brit. Med. Jour.* June 25, 1904.

RHEUMASAN.

Kobisch[1] uses this preparation, a 10 per cent salicylic acid ointment made up with superfatted soap, in various **Chronic Rheumatic** and **Gouty Conditions.** Two drachms are thoroughly rubbed into the skin over the affected area and covered with a thin layer of cotton wool, which is removed after twelve hours. The skin is then washed, and partially, but not entirely dried, and a second inunction is made. These applications are repeated night and morning for two days, and then an intermission of two days is made. In some cases the preparation causes slight irritation of the skin.

REFERENCE.—[1]*Deut. Med. Woch.* 1904, No. 38.

ROBORAT.

Sarason[1] finds that this combination of lecithin and albumin possesses the property of making firm emulsions with oils. The emulsions consist of equal parts of the finely divided oil and roborat. They form dry powders, which can be dispensed in every form, a powder or in capsule, tablets, or in cachets.

REFERENCE.—[1]*Pharm. Ztg.* No. 92, 1904.

SALICYLIC ACID.

Frey[1] distinguishes two forms of toxic action produced by salicylic acid on the kidneys. The one is common to all salicyl preparations, and consists in alterations in the vessels leading to hyperæmia and interstitial hæmorrhage. The other action is a local action on the renal epithelium, which depends on the presence of free acid, and consists in a local caustic action. By experiments on rabbits and dogs Frey has been able to show that this latter action only takes place if the urine is acid. In alkaline urine there is no production of albumin and casts ; consequently it seems clear that the irritating action is due to the liberation of free salicylic acid. A series of experiments on himself shows that these findings also hold good for human beings. The administration of 30 grains of sodium salicylate caused albuminuria with casts and epithelial cells to appear if the urine was acid. The same amount with alkaline urine caused no irritation, and the findings were negative. The therapeutic indication is obvious, and shows that alkali should always be administered to prevent the urine becoming acid.

Quenstedt[2] states that the use of moderate doses of salicylic acid is followed by signs of irritation of the urinary tract. On stopping the

drug the irritation rapidly passes off, but as long as the salicylic treatment is maintained there is no complete cure. The presence of epithelial cells from all parts of the urinary tract is almost constant, and there is commonly a trace of albumin, with casts of various types. White corpuscles are more common than red blood corpuscles.

Stiller[3] finds no drug so useful as sodium salicylate for bringing to an end recurring attacks of **Renal Colic.** During the free intervals the drug is given in 7 gr. doses three or four times in the day. With severe attacks the patient is confined to bed, but in less severe cases this is unnecessary. The salicylates should be kept up for some time after pain has ceased, and for the next few years a short course of salicylate treatment should be taken every year.

Mendel[4] strongly recommends intravenous injection of salicylates. It causes no discomfort. He uses for injection purposes a proprietary preparation called **Attritin,** consisting of sod. salicyl. 8 grams, caffeine sod. salicyl. 2 grams, in 50 cc. of water. This is put up in sterile flasks. The dose is 2 cc. twice daily. The therapeutic action is very rapid, and so certain that it may be used for diagnostic purposes.

Rubens[5] confirms these claims. In acute rheumatism the injection of attritin is the most rapid method of relieving the pain, but the course of the disease is not rendered any shorter than with other methods of using the salicylates. But in **Neuralgia,** especially post-influenzal, the cure is more rapid than with the ordinary methods.

REFERENCES.—[1]*Münch. Med. Woch.* 1905, No. 28 ; [2]*Ther. d. Gegenw.* No. 3, 1905 ; [3]*Wien. Med. Woch.* 1905, No. 1 ; [4]*Münch. Med. Woch.* 1905, p. 165 ; [5]*Deut. Med. Woch.* Jan. 19, 1905.

SANOFORM.

From an experience of eight years, Unger[1] confidently recommends sanoform as an odourless substitute for iodoform. It may be used as a dusting powder, or for impregnating gauze. It is not so irritating as iodoform, and in his experience has never given rise to any toxic manifestations.

REFERENCE.—[1]*Ther. Monats.* March, 1905.

SAPONIN.

Saponin, or infusions containing saponin, are used abroad to give a lasting froth to lemonade, aerated wines, etc. Lohmann[1] has tested the effect of prolonged administration of saponin to rabbits, but found no deleterious action, as the animals remained in good health and put on weight. He himself took large quantities of saponin up to 1 gram daily for months without any inconvenience. He concludes that saponin is therefore an innocuous addition to beverages, as 1 mgram is sufficient to produce a permanent froth.

REFERENCE.—[1]*Zeits. f. offent Chem.* ix. p. 320.

SCOPOLAMINE-MORPHIA.

Kochmann[1] considers that the action of large doses of scopolamine is somewhat variable in human beings. Neurasthenic and hysterical people seem to be abnormally susceptible. Further, this preparation

should only be used with great caution in the presence of myocardial and renal affections. He holds, therefore, that the use of large doses of morphia and scopolamine to induce deep narcosis is objectionable on account of the danger. On the other hand the preliminary use of small doses of morphia and scopolamine ($\frac{1}{6}$ gr. morph. and $\frac{1}{120}$ to $\frac{1}{80}$ gr. scopolamine) is useful to support the action of a general anæsthetic in hospitals, but it is not safe for private practice.

Puschnig[2] comes to almost similar conclusions. He uses the scopolamine mixture as a preliminary step to general anæsthesia with ether or chloroform. The patients lose their anxiety, and the stage of excitement is shorter. Subsequent vomiting is uncommon. With ether the mucous and bronchial secretion is less evident. In midwifery practice the injection of scopolamine-morphine in similar doses is useful in alleviating excessive pain. It acts within half an hour, and though the patient goes to sleep the pains are not diminished in strength, and the child does not suffer. The action lasts from 1 or 2 to 7 hours. It is also a useful general sedative in gynæcological cases.

References.—[1]*Münch. Med. Woch.* 1905, No. 17; [2]*Wien. klin. Woch.* 1905, No. 16.

SODIUM CHLORIDE.

Griess[1] has found that after using silver nitrate injections for urethritis it is a good plan to wash out the urethra with a solution of sodium chloride, which neutralizes the surplus silver nitrate. The patient has greater comfort, and the caustic action of the silver salt is eliminated in a great measure. The application of the nitrate may be more general, and the stronger solutions may be used, as we need fear no over-action or caustic effect. Consequently the clinical results are better. The sodium chloride is applied by means of a deep urethral syringe. The length of time between the two injections should be enough to allow the operator to withdraw and cleanse the syringe.

Reference.—[1]*Ther. Gaz.* Sept. 15, 1904.

STOVAINE.

Meyer[1] finds that stovaine does not produce so good anæsthesia in the larynx as cocaine. For anæsthetizing the nose and throat 5 to 10 per cent solutions of stovaine were as effective as corresponding solutions of cocaine, while the taste is not so unpleasantly bitter.

Sonnenburg[2] recommends stovaine in place of cocaine for producing **Spinal Anæsthesia.** He employs this form of anæsthesia more especially for operations on the rectum, as the patient, though deprived of sensation, can press down and protrude hæmorrhoids, etc. The ordinary dose was 6 cgrams. and the anæsthesia begins in from 2 to 10 minutes, and in the course of a further 4 to 5 minutes anæsthesia of the lower part of the body is complete, extending up to the lower costal margin. The anæsthesia lasts for 1 hour to 1½ hours.

References.—[1]*Ther. Monats.* May, 1905; [2]*Deut. Med. Woch.* March 2, 1905.

STRYCHNINE.

French[1] has the firm conviction that strychnine is the best drug to use in the treatment of **Alcoholism.** In this condition it is a tonic and true stimulant.

Reference.—[1]*Merck's Arch.* July, 1904.

STRYCHNOS TOXIFERA.

Gordon Sharp[1] has succeeded in proving that curare is obtained from this plant, which grows in British Guiana. The curarine is contained in the bark, forming 5 per cent. Pure curarine is very deliquescent, and soon deteriorates. It is extremely active. A paralysing dose for frogs is $\frac{1}{250000}$ grain for each gram weight. The salts are also poisonous, though many authorities deny that the salts of curarine have any activity. In addition to the action on the motor end plates, curare acts also on the sensory nerve terminations, and causes transient tetanus. For practical therapeutic purposes curare is too uncertain. It could only be of use in spasms of peripheral origin. Large doses are required when the drug is given by the mouth, as it is rapidly excreted by the kidneys.

Reference.—[1]*Med. Press.* Jan. 11, 1905.

STYPTOL.

This drug is cotarnine phthalate, which is said to be an improvement on stypticin (cotarnine hydrochloride) as a **Hæmostatic.** The dose is $\frac{3}{4}$ gr. three or four times in the day. For rapid action three grains dissolved in 35 minims of water may be injected subcutaneously.

Reference.—*Brit. Med. Jour.* Feb. 11, 1905.

STYRACOL.

This cinnamic ester of guaiacol is a tasteless preparation which acts as an intestinal antiseptic, breaking up into cinnamic acid and guaiacol. The latter body is excreted as glycocoll, while the former appears combined with ethyl-sulphonic acid and glycuronic acid. As styracol is insoluble in water it is best administered in powder form or in cachets. The dose is 15 grs. thrice daily.

Reference.—*Brit. Med. Jour.* Feb. 11, 1905.

TACHIOL.

This is the name given to an aqueous solution of silver fluoride. It is a colourless, odourless preparation, with a metallic taste. It does not stain the skin. Ferrannini[1] has studied its action as a **Gastric Disinfectant.** It coagulates albumin to a lesser degree than silver nitrate or corrosive sublimate. It acts as an excellent gastric anti-fermentative and antiseptic when given internally, or when used to wash out the stomach as a 1 to 3-5000 solution. As it has no deleterious action on digestion, and rather stimulates the motor functions, it acts favourably in chronic gastritis.

Reference.—[1]*Rif. Med.* Sept. 27, 1904, *Brit. Med. Jour.* Feb. 11, 1905.

TANNIN.

Lewin[1] claims that alkaline tannates are excreted in the urine as tannic acid, and argues that a remote hæmostatic or astringent action is quite possible. To prevent gastric irritation the tannin may be given in the form of an albuminate. A convenient formula is to dissolve two to five parts of tannin in 150 parts of water, and add to this the white of an egg dissolved in water. This gives a preparation as useful as any of the modern compounds of tannic acid and albumin, as tannalbin. Lewin's solution has proved useful in nephritis.

REFERENCE.—[1]*Deut. Med. Woch.* May 26, 1904.

THEOBROMINE.

Serbourge[1] states that caffeine and theobromine are readily oxidized by direct agents, e.g., ammonium persulphate, into formic acid. On the other hand oxidation by an indirect agent, chlorine or bromine, results in the formation of a uric acid compound. This is of interest, since Huchard's[2] clinical experiences lead him to the conclusion that there is a certain analogy between formiates and theobromine in their therapeutic effects.

Plavec[3] holds that theobromine is not a true **Diuretic,** but acts through its power of stimulating the force and efficiency of the cardiac muscle. As the blood pressure is lowered by an action on the vaso-motor centres the work of the heart is made easier. As a result of the dilatation of the vessels and more efficient cardiac action there is increased volume of blood brought to the kidneys, and from this results the diuretic action. Consequently theobromine is indicated where the heart action is regular but weakened, as in myocardial disease, and in arteriosclerosis and aortic incompetence.

REFERENCES.—[1]*Bull. Commer.* April 30, 1905; [2]*L'Union Pharm.* Mar. 31, 1905; [3]*Arch. Inter. de Pharm.* p. 275, Vol. xiii., 1904, *Brit. Med. Jour.* Jan. 7, 1905.

THEOCIN.

Hundl[1] finds that the diuretic effect of this preparation is very marked in **Œdema** of cardiac origin. It is also in his experience useful in **Acute Nephritis,** but it proved useless in chronic nephritis, while its action in tuberculous peritonitis, pleural effusion, cirrhosis of the liver, and splenic leukæmia was unsatisfactory. As side-action the drug occasionally causes diarrhœa and mental excitement, which, in some instances, assumes the form of severe epileptiform convulsions. Meinertz[2] states that theocin-sodium acetate is less liable to produce unpleasant after-effects than theocin.

Schlesinger[3] has used theophyllin in various forms—as the pure salt theocin; as theophyllin sodio-salicylate; theophyllin sodio-acetate; and as sodium theophyllin. He finds it one of the most powerful diuretics we possess. It acts best in cardiac cases, but is also useful in kidney conditions and in **Pleuritic Effusions.** He has had no good effect in peritonitis. Theophyllin has a toxic action, which must always be borne in mind. It frequently caused oppression in

the stomach, nausea, loss of appetite, and vomiting. The gastric disturbance is most apt to occur if the drug be given in powder form. The best method is to dissolve it in aqua menth. pip., or add a few drops of a 10 per cent solution of lactate of eucaine to the aqueous solution. Diarrhœa is common after the use of theophyllin. As a rule this does not cause much trouble, but occasionally the stools are excessively frequent and watery, though there is never any tenesmus. The looseness is apt to persist for several days after the drug is stopped. Of special interest is the development of epileptiform convulsions, with loss of consciousness. Schlesinger has observed this phenomenon in six instances. In prescribing the drug it is necessary to remember that in a certain number of instances theophyllin has a convulsive action from stimulation of the cerebral cortical cells. As a rule it is possible to prevent the development of the convulsive stage, since such patients usually show prodromal symptoms, as severe headache or vomiting. As a further precaution he recommends the use of one of the compound salts in preference to pure theocin. The daily dose should run about one gram, and ought never to exceed 1·5 gram. The drug should be given dissolved in a large quantity of water, and it is a good plan only to use it every alternate day, using on the intervening day a diuretin preparation. If a patient using theophyllin develops headache or sickness the drug should be stopped immediately. If these precautions are observed there is but little risk of causing convulsions.

References.—[1]*Ther. Monats.* April, 1904; [2]*Ibid,* June, 1905; [3]*Münch. Med. Woch.* 1905, No. 23.

URESIN.

This is the name given by Spasski[1] to a urotropin compound with dilithium citric acid. He finds that unlike urotropin, the new compound has the property of altering the proteid metabolism. After its use the amount of oxalic acid excreted is increased at the expense of the uric acid. Urotropin acts merely as a solvent of uric acid, but has no direct action on nitrogenous metabolism.

Reference.—[1]*Vratch,* April 2, 1905.

URICIDINE.

Tirard[1] states that this compound, which has been recommended as a solvent for gouty concretions, rheumatism, and uric acid, acts chiefly as a laxative, and does not relieve the pain of gout or dissolve gouty concretions.

Reference.—[1]*Med. Press,* Jan. 11, 1905.

UROTROPIN.

Patschkowski[1] confirms Widowitz's statement that urotropin acts as a prophylactic against the onset of nephritis in **Scarlet Fever.** Out of a series of 52 cases of a particular epidemic thus treated, only 3·8 per cent developed nephritis, whereas without urotropin the number averaged 20·9 per cent.

Reference.—[1]*Ther. Monats.* Dec. 1904.

VALERIAN JUICE.

Chevalier and Prichet[1] point out that the fresh expressed juice of the valerian root differs in its action from preparations made from the dried root. The fresh juice is antispasmodic and sedative, without any permanent stimulant action. It is possible, as is pointed out by the *Lancet*[2], that the change depends on the fact that bornyl isovalerianate during the process of drying gradually decomposes into free isovalerianic acid. As this substance, bornyl isovalerianate, is contained to the extent of one per cent in the volatile oil of valerian, it would appear to be more satisfactory to employ this oil instead of the fresh juice. The oil can be distilled and obtained in quantity.

References.—[1]*Répert. de Pharm.* Feb. 1905; [2]*Lancet*, May 20, 1905.

VALIDOL.

Koepke[1] has used this preparation extensively in the treatment of **Sea-sickness.** The result is, as a rule, highly satisfactory. In very slight cases of bad taste in mouth, salivation, headache, and giddiness a dose of 10 to 15 drops on sugar is sufficient if the patient then lies down. After half-an-hour or so a glass of wine and a biscuit may be taken. If necessary the treatment may be repeated. With severer cases, where the sickness has lasted for a day or more, the patient should be sent to bed and take validol on sugar. If the drug is vomited a second dose may be given, and as a rule rapid relief from headache and oppression is obtained, so that at the end of thirty minutes or so the patient can take without vomiting two or three tablespoonfuls of an iced mixture of yolk of egg and sherry. This is repeated several times in the day, and a gradual return to ordinary light diet may then be made.

Reference.—[1]*Ther. Monats.* June, 1904, *Brit. Med. Jour.* Sept. 10, 1904.

VERONAL.

San Pietro[1] finds this a very satisfactory **Hypnotic**, easily given, and without unpleasant after effects. So far from exerting a depressing influence on the heart, in some cases of failing compensation he has noticed a distinct rise of blood-pressure after its use. Though tolerance is only slowly established, it is a good plan to use veronal alternately with another hypnotic, as by this plan it is possible to avoid raising the efficient dose for some considerable time.

Schiffer[2] deals with its use in children. The dose runs from $\frac{2}{3}$ gr. to $1\frac{1}{3}$ gr. once or twice in the day. It is useful in **Digestive Disturbance** and in **Tetany.** Older children bear veronal well, and the dose may be stated to be one half that of chloral.

Sérieux and Mignot[3] speak highly of the effect of veronal in the **Insomnia of the Insane.** The individual dose requires to be determined for each individual patient, but as a rule it varies between 5 and 15 grs. It acted well in the case of melancholics and excited dements, but had very little action in the agitation of general paralysis. In one instance they note that the use of veronal was followed by the development of a roscolous rash, with vomiting, headache, and sore throat.

Pisarski[4] tested the drug on sixty patients, varying in age between twelve and seventy-eight years. The patients repre ented the ordinary run of hospital cases. The results were generally favourable. The action is mainly sedative, and there is but little power of allaying pain. In a little over one quarter of the cases there were on awaking subjective symptoms, headache, ringing in the ears, unsteady gait, etc.; but these proved transitory, and, as a rule, were only seen after large doses. The drug is cumulative to a certain extent. Thus its action is more successful if the same dose is repeated several nights running. At first a small dose may be ineffective, but after being repeated a day or two it then produces prolonged sleep. Indeed, he states that if veronal be used for any length of time, diminishing rather than increasing the dose is required. No deleterious action on the urine was noticed, but no definite diuretic action could be observed.

With the increased popularity of veronal the number of cases of **Poisoning** is becoming considerable. Just[5] reports three instances. The symptoms were burning and itching of the skin, and the development of thirst, and a rash of confluent reddish-violet spots. None of the cases proved fatal.

Kuhn[6] reported a case of veronal poisoning in which, in addition to the usual redness, heat, and itching of the skin, there was great swelling of the face and lips. The mucous membrane of the mouth and œsophagus was also implicated, and appeared red, swollen, and covered with small vesicles

Kress[7] noted a cumulative action in three patients after three or four days' use of veronal in 7½ gr. doses. The patients slept for several days almost continuously, and partook of very little food.

Fränkel[8] found veronal useful in **Whooping Cough.** For children under four years of age ½ gr. was given three or four times daily. For older children 1 gr. to 1½ gr. may be given.

Ulrici[9] finds a new use for veronal as an **Anhydrotic in Phthisis.** He gives it at bedtime in 5 gr. doses. The first night's dose has as a rule but little action, but after the second dose the sweating is much less marked, while after the third night as a rule it ceases entirely. On stopping the drug the sweating does not return for some time, and again yields to a few doses of veronal.

References.—[1]*Clin. Med.* June 20, 1904; [2]*Deut. Med. Woch.* June 16. 1904; [3]*Arch. de Neurol.* Jan. 1905; [4]*Ther. Monats.* Oct. 1904; [5]*Deut. Med. Ztg.* Bd. 83, 1904; [6]*Hospitalstid*, 1905, No. 2; [7]*Ther. Monats.* 1905, No. 1; [8]*Deut. Med. Woch.* No. 6, 1905; [9]*Ther. Monats.* No. 12, 1904.

VIOLET LEAVES.

The constituents of violet leaves have been examined in the *Lancet* laboratory[1]. It has been found that the leaves contain two crystalline bodies, one a glucoside, forming approximately 2 per cent of the leaves, and an alkaloid which is present in very much smaller quantities. There is also present a dark green oil, forming 0·3 per cent of the leaves.

Reference.—[1]*Lancet*, April 22, 1905.

YOHIMBIN.

Toff[1] found yohimbin of use in **Toxic Impotence** following the excessive use of mercury. He had also satisfactory results in a case of **Impotence due to Sexual Excess,** and in another instance where the apparent cause was simply violent excitement. As the drug apparently owes its efficiency to the increased flow of blood to the genitals, he tried it in cases of functional irregularity of menstruation. The results were satisfactory in cases where there was no organic lesion.

REFERENCE.—[1]*Deut. Med. Woch.* 1904, Oct. 20.

ZINC (Chloride of).

Broese[1] finds that, although this substance has no effect as an antiseptic, it affords considerable protection to fresh wounds against bacillary invasion, by means of the intense cauterizing influence which it exerts. He has demonstrated this on rabbits in the following manner. A fresh incised wound in the ear is cauterized with a 50 per cent solution of chloride of zinc, and then is inoculated with anthrax or fowl cholera. If the cauterization preceded the infection, or if the cauterization followed the inoculation by not more than a minute, the animals do not become infected. Apparently the precipitated albumin does not prove a suitable nutrient medium for the growth of the bacilli.

REFERENCE—[1]*Deut. Med. Woch.* Dec. 22, 1904.

THERAPEUTICS AND ORGANO-THERAPY.

As regards the general action of serum, some interesting suggestions have been put forward to explain the causation of rashes.

During the past year the treatment of rheumatism with Menzer's serum does not seem to have made much headway. We have used it in two or three chronic cases, but in only one instance did it prove beneficial. In that case the patient was suffering from a very intractable variety of subacute rheumatic infection, with implication of many joints and very general infections of the fibrous tissues. The injection of the serum was followed by a marked reaction in all the infected spots; but under continued use of the serum the joints diminished in size and regained a fair measure of mobility.

Following a suggestion of Behring, that young animals might be immunized by feeding them with the milk of immunized animals, considerable attention has been directed to this aspect of immunization. The results of the different experimental work are rather contradictory, and on the whole do not promise much benefit from such feeding experiments.

Considerable interest continues to be taken in the treatment of scarlatina with antistreptococcic serum, and several new sera have been prepared.

The method of using anti-tetanic serum has undergone many variations. The direct injection into the brain has been given up in

favour of intra-spinal injection, while more recently the injection into the stems of the nerves supplying the wounded area has been practised.

The reports concerning the use of antithyroidin in exophthalmic goitre continue to be highly favourable; but we have had personally no experience of this preparation.

Courmont[1], as the result of several years' experience, recommends the use of **Intravenous Injection** as the best method of employing therapeutic sera.

Anthrax.—Wilms[2] reports a severe case of facial anthrax, in which the intravenous injection of a serum prepared by Sobernheim, of Halle, exerted a curative action.

Diphtheria.—Cruveilhier[3] raises an interesting point about the value of the present method of *standardizing* antidiphtheritic serum. The present method only takes into consideration the number of antitoxin units, but in addition there are in the serum various other bodies: agglutinin, sensibilisatrix, and antimicrobial bodies. By a series of comparative experiments Cruveilhier has been able to show that the value of a serum does not depend entirely on the number of antitoxic units it contains. In some instances a serum containing only 200 antitoxin units proved more efficacious as a prophylactic than one containing 500 units. Similarly, in curative experiments, the apparently weaker serum gave equally good results. He suggests, therefore, that a better plan for estimating the value of a serum would be to measure its actual therapeutic value.

Rovere[4] finds that where injections of antidiphtheritic serum have produced severe reaction, the patient's blood subsequently contained precipitin substances, which act on the blood of the horse, from which the serum was obtained. In cases where there was no reaction, or where the reaction was but slight, the blood did not develop precipitin.

Lauder Brunton and Bockenham[5] state that the circulation of diphtheria toxin through the isolated liver diminishes the lethal action. The bile and juice of the liver acquire slight antitoxic action, and probably the liver forms an antitoxin.

Hæmoglobinuria, Paroxysmal.—Widal and Rostaine[6] have found that the blood of patients who suffer from this disease contains a deficiency of antisensibilisatrix, the substance which normally protects the red corpuscles against the hæmolytic action of the sensibilisatrix. The addition of even a small quantity of serum containing antisensibilisatrix prevents the onset of attacks of hæmoglobinuria. They[7] claim that in the case of a woman exposure to cold always brought on an attack, till she received serum treatment. The serum was obtained by injecting animals with massive doses of normal serum. Before being used it was heated to 55° C.

Pneumonia.—In severe cases of pneumonia Roemer[8] has used a polyvalent serum prepared by Merck. Previous experience had shown that it acted well in pneumococcic infections of the eye. In pneumonia, soon after injection, the pulse, respiration, and temperature

improved, while the character of the sputum altered. Subjective improvement was very marked. As a rule the temperature fell gradually, without much sweating. Only in one case was there a critical fall of temperature. The serum had no deleterious action on the kidneys or skin.

Castresana[9] reports favourably of the serum treatment of suppurating corneal ulcers, which heal up quicker under this treatment than with other methods.

Puerperal Fever.—Pilcer and Eberson[10] have treated 28 cases with antistreptococcic serum. They give an initial dose of 40 cc. If the temperature falls to normal half this amount is subsequently given, but if the temperature remains above normal the original dose is repeated. In no case is more than 100 cc. employed. The chief action noticeable is reduction of temperature and the development of a stage of subjective sense of well-being.

Rabies.—Solis-Cohen[11] points out that Pasteur's antirabic treatment can be quite well carried out at home if the patient lives within a day's journey of a reliable Pasteur Institute. The virus can be sent by post and injected by the family physician. Arrangements should be made that the supply is delivered on the day of despatch. It should be kept on ice if it cannot be used immediately. After carefully washing the parts the injection is made into the abdominal subcutaneous tissue. The puncture is sealed with collodion. The treatment caused no local or constitutional disturbance in two cases treated by this means, and neither of the patients were confined to the house. There was occasional complaint of drowsiness and headache, with disturbance of sleep. During treatment all alcoholic excess should be avoided, and it is well to keep the bowels freely opened.

Rheumatism.—Bibergeil[12] comes to the following conclusions regarding the action of **Menzer's Serum** in rheumatism. It is useless in those chronic cases where structural changes leading to bony or fibrous ankylosis have taken place. In such cases, even if an inflammatory reaction follows the use of the serum, the resulting phagocytosis is unable to absorb the new-formed tissues, and no healing of the joints results. In acute rheumatic inflammation the use of the serum is also unsatisfactory. The inflammatory reaction intensifies the pain so much that opium was required in many cases. The real field for the serum is in subacute or chronic cases without formation of adhesions. In such cases, though the ordinary salicylic treatment may give no result, the use of serum leads to rapid improvement, and in many instances effects a complete cure.

Scarlet Fever.—Savtchenko[13] has prepared a scarlet fever serum He uses three forms of streptococci obtained from severe cases of scarlatina: (1) The streptococcus is obtained from the blood in a fatal case; (2) From the mucus of the tonsils in a severe case of scarlatina: (3) The third is obtained post-mortem from the heart blood. Cultures from these three sources are made without previous animal passage. The best medium is Martin's broth mixed with peritoneal fluid. Horses

are immunized by injecting progressive doses of the toxins, as the cultures produce too marked a reaction.

Menschikoff has used this serum in 20 cases of scarlatina with gratifying results. The serum exerts a favourable influence on the course of the disease, converting severe cases into mild types. In most cases the temperature falls within 24 to 36 hours after the use of the serum. Where no fall occurs the throat is found to be the seat of a mixed infection. Together with the fall of temperature the general condition improves, and the pulse and respiration show a corresponding improvement. A sluggish eruption becomes more marked in the first twenty-four hours, but then fades more rapidly than usual. The serum also exerts a beneficial local action on the throat lesion. The ordinary complications are not entirely prevented by the use of the serum, but they are milder and disappear more rapidly. Occasionally the serum caused an urticarial rash some days after the injection. More rare was the development of local œdema of the hands and face, and glandular swelling. The author insists on the necessity of early use of the serum. The dose employed varied from 90 to 250 cc.

Palmirski and Zebrowski[14] hold that the specific microbe of scarlet fever is the streptococcus conglomeratus, which they have isolated in 17 fatal cases. They found the organism in desquamating skin, in the lungs, brain, liver, kidneys, and spleen. With this organism they prepared a specific antiscarlatinal serum which exerted distinct curative action. They found it immaterial whether they used a single strain or a mixture of various bacterial strains from different cases of scarlatina, which fact they hold indicates the unity of the pathogenic agent. The serum has been extensively tried on over 1000 cases, of which 133 were very severe and are therefore specially considered. In all these cases the beneficial effect of the serum was marked. It is revealed in amelioration of the general condition, by a sedative effect on the nervous system, by reduction of temperature, and by the improvement in the pulse, which becomes slower and fuller. No arresting of the rash was observed. The subsequent evolution is unchanged. It is true the rash is somewhat paler and less violet-hued, but this the authors ascribe to the better action of the heart. The influence of the serum is extraordinary in cases where the disease consists only of the rash, fever, and a catarrhal condition of the throat. The action is slower and less certain if the angina is attended with exudation or necrosis, or where there is glandular enlargement and otitis media. The authors are not very certain that the serum acts to a marked extent in preventing the incidence of complications Out of the 133 cases there were 15 cases of suppuration of the submaxillary glands, and 22 instances of otitis media. The serum had no action in those cases in which the streptococcus could be demonstrated in the blood. On the other hand the serum seems to exert a very favourable influence on scarlatinal nephritis, which was much less common among cases treated with the serum. The mortality among the severe cases treated with the serum was 15 per cent, whereas the ordinary mortality

for such cases is 60 to 70 per cent. As regards the mode of action of the serum, it is held that it does not act as a bactericide, but rather as an antitoxin and a stimulant of phagocytosis. A few hours after the injection of the serum there is an intense leucocytosis. In fatal cases the resulting leucocytosis is very slight.

TETANUS.—Neugebauer[15] reports three cases of tetanus which were treated with frequently repeated large doses of antitoxin. In two of the cases the result was successful, but the third patient, despite energetic treatment, died. In all the cases the patients were put under chloroform, and the serum was then injected into the lumbar canal. Local anæsthesia was not satisfactory, as the manipulation attending the injection always produced convulsions. No attempt was made to withdraw an amount of cerebrospinal fluid corresponding to that of the serum to be injected. The amount of antitoxin forming each dose contained 100 antitoxin units. Despite the frequent repetition of the injection no irritation symptoms were noted, as headache, nausea, or local reaction. The serum in none of the cases cut short the convulsions, but in the two successful ones the spasms continued for weeks after convalescence had set in. The chief action of the serum seems to consist in preventing the development of high fever, which, according to v. Leyden, is a sign of approaching death. Neugebauer recommends that to save time antitoxin should be kept in the dried form, as this preserves its activity well for an indefinite period. The object of the serum treatment is to neutralize the toxin, not so much in the blood as that already located in the nervous system. After intradural injections the serum is rapidly absorbed, and soon appears in the peripheral circulation, where it is comparatively useless; hence the injections must be frequently repeated.

Several cases have been reported which were treated with antitoxin. Henderson[16] reported a somewhat chronic case which at first reacted well to K.Br. and chloral hydrate, but on the 25th day suddenly developed general spasms, which passed into severe convulsions. Injections of serum gave prompt relief, and eventually led to a perfect cure. Collins[17] had a more severe case which did not react well to the serum, so that curare had to be injected. The result of the combined treatment with curare and serum was successful, and the boy made a gradual recovery. Stoney[18] used a Pasteur serum in two cases. The first man died, although the serum was injected into the spinal canal. The other case was a mild chronic variety, and recovered, but Stoney does not think that the serum had any action.

Rogers[19] employs the following technique in tetanic infection. The serum is injected into the motor nerves supplying the injured part as near the spinal cord as possible. For this purpose the nerves are exposed by an incision. The wound is kept open, and a ligature is passed under the nerves, so that if the injection requires to be repeated there may be no difficulty in securing the nerve trunks. The serum is also injected directly into the spinal cord, and may also be used intravenously. The wounded region is freely exposed, cleansed, and

swabbed out with tincture of iodine, and then plugged with iodoform.

Küster[20] also recommends the combination of subcutaneous use of the serum with direct injection into the stems of the nerves supplying the wounded part.

Thyroid.—Christiani[21] has demonstrated that even in man it is possible to implant thyroid gland successfully. In the course of time the pieces take on the appearance of the normal tissue and become vascularized. He narrates a very instructive case where the thyroid gland was entirely removed in a girl of twenty-one. Subsequently, to keep the girl in fair health, 30 minims of a fluid extract of thyroid gland was required daily. In July, 1904, sixteen small pieces of thyroid gland were implanted, each of about 1½ grains, so that in all they represented about one-tenth of a normal gland. In the course of the next few weeks it turned out that this amount was not enough, as 20 mins. were still required of the liquid extract. A further 22 pieces were implanted, with great improvement, as now, after six months, only an occasional dose of 4 to 10 minims is required.

Shienger[22] reports four cases of Graves' disease treated with **Antithyroidin**, i.e., serum obtained from goats after removal of the thyroid gland. In all cases improvement resulted in the general condition, together with increase in weight and diminution in the rate of the pulse. In three cases there was no diminution in the size of the thyroid gland. In the fourth case, one of acute onset with marked swelling of the gland, dyspnœa, palpitation, and cardiac pain, the administration of 5 minims of antithyroidin every second day at first made the symptoms more marked, but after a few days' treatment there was great progressive improvement in all the symptoms, and exophthalmos and goitre disappeared. Alexander[23] also reports three cases in which the use of 5 grams of the serum every second day produced remarkable improvement. Subjective improvement is rapidly obtained; the patients become quiet, sleep better, and put on weight. The action on the thyroid gland is quite distinct. The gland becomes much smaller and softer, while the thrill disappears. Exophthalmos improves hand in hand with the other symptoms. In contradistinction to other observers, Alexander was able to note a distinctly beneficial action on the heart and circulation. The amount of serum used varied in the different cases, and one of them relapsed after the serum had been stopped for 2 months; but he again reacted well to a course of 50 grams given in 1 cc. doses four times daily.

Dürig[24] has put a case upon record which shows that the amount of serum cannot be increased indefinitely. He gave a patient 230 cc. of antithyroidin, and found that the symptoms of exophthalmic goitre disappeared, but were replaced by mild myxœdema, with headache, apathy, and mental stupidity. Probably the best plan to adopt is to give a course of 40 to 50 grams of antithyroidin, and then stop it and await developments. If the symptoms return the patient should receive another course of 40 grams.

Parathyroid Medication.—MacCallum, in a paper read in 1903, stated

that he has found these glands atrophic or degenerated in four cases of exophthalmic goitre. He suggested that parathyroid treatment might prove of use in this disease. More extensive investigation has led him[25] to modify this opinion, as in a further series of nine cases he found the parathyroids practically normal. Walsh[26] comes to the same conclusions. He treated several cases of exophthalmic goitre with parathyroid extract, but the results obtained were negative. MacCallum holds that gastric tetany from the absorption of toxic material from the dilated stomach is due to inability of the normal parathyroid to neutralize the toxins. In such cases the administration of parathyroid extract might do good, though his experimental work[27] has shown that it is difficult to replace the function of the parathyroids by parathyroid extract.

Tuberculosis.—Behring suggested that it might be possible to immunize children against tuberculosis by feeding them on the milk of immunized animals. Unfortunately subsequent experience does not bear out his suggestion. The antitoxins are present in the milk, but it seems that the children are unable to absorb it when the milk belongs to another species of animal. Kayser[28] found the antitoxin present in the blood of a child born after the mother had successfully passed through an attack of diphtheria. Römer[29] was of opinion that the injection of antitoxin or toxin caused some alteration in the placental tissue, and that this damage permits the antitoxin to pass into the circulation of the child. Polano[30] comes to a different conclusion. He states that the antitoxin passes to the child whether the immunity of the mother be active, passive, or natural.

Salge[31] states that young children are unable to absorb the antitoxin of milk from animals of another species when it is administered by the mouth, but they can absorb it when it is present in the mother's milk. He considers that the difference in absorbability is due to the fact that in the case of the heterogeneous serum the antitoxin is united with a form of albumin which the child is incapable of absorbing. Hamburger[32] shows that Salge is not quite accurate, since in the first eight days of its life an infant can absorb a certain amount of tetanus serum given by the mouth, but the immunity obtained very rapidly disappears and is useless for all practical purposes. Figari[33] states that his experiments on rabbits show conclusively that the milk of immunized animals when fed to rabbits is able to immunize them against experimental tuberculosis. Similarly, experiments carefully carried out on two infants fed with the milk of immunized animals showed that the antitoxins and agglutinins contained in the milk passed into the blood of the infants, which after several months' feeding developed distinct agglutinating and antitoxic powers.

Experiments by Blasi[34] show that for some cases, at any rate, it is important whether the immunity of the mother be active or passive. Animals which are rendered passively immune do not confer immunity on their nursing young, whereas with active immunity the young are rendered immune

Finally Bertarelli[35] has investigated the immunization of animals in a series of elaborate experiments, which throw some light on the factors which affect the immunization of animals by means of substances administered by the mouth. His experiments were made on rabbits and dogs, and as an indicator he used the development of agglutinin in the blood of the fed animals. If very young animals are given typhoid bacteria mixed with their milk, the animals develop agglutinins in a fairly satisfactory fashion. The tissues seem unable to produce any agglutinin during the first 4 or 5 days of life, but thereafter there is a steady production. Similarly the young animals after the 4th or 5th day commence to produce hæmolytic antibodies.

Attempts to produce passive immunity by administering to the animals large quantities of antitoxin units were not successful, as only a very slight formation of agglutinin resulted. Only in the very first few days of life is there a slight absorption of the agglutinin from the serum. On the other hand, animals nourished with milk of the same species containing agglutinating bodies, readily absorb these, and their blood rapidly acquires agglutinating properties. The absorption takes place best during the first ten or twelve days of life. The passage of the protecting bodies from the milk into the blood is much better carried out in newborn animals than in adult animals. Probably the reason is that the stomach of young animals contains only traces of pepsin and acid, while the structure of the stomach and intestine is better adapted for absorption.

Tuberculin.—Weischer[36] reports a case in which, despite every precaution, the use of tuberculin was followed by the development of a large pleural effusion. Schick[37] has tried the old tuberculin for diagnostic purposes on 120 children ranging from 3 months to 14 years. He finds that it is of diagnostic value if carefully employed. Certain peculiarities of its action in children must be noted. It is comparatively frequent for a marked local reaction to develop at the point of injection. Further, a protracted general reaction is common. The nearer in point of time that the injection follows a previous tuberculous infection, the more marked is the reaction.

Friedmann[38] has found that a form of tubercle bacillus isolated from the tortoise is quite innocuous for warm-blooded animals, and can be used to produce active and passive immunity in calves and guinea-pigs.

Typhoid.—*Antityphoid Inoculation.*—A series of experiments have been carried out by Leishman, Harrison, Smallman, and Tulloch on the blood changes following typhoid inoculation[39]. The investigation was carried out at Aldershot on healthy soldiers. The men were arranged in groups. *A* group was inoculated with a comparatively large dose of vaccine; *B* group with a medium dose; and *C* group was given small doses. Finally, a fourth group, *D*, was formed of men who had been inoculated 5 years previously, on whom the effect of very small doses was determined, to find out whether in such cases there was an increased response to inoculation in the elaboration of protective

substances. At the end of 10 days all the groups were re-inoculated with double the original doses The result of the first inoculation caused moderate general and local reaction with the large dose, while in group *B* the symptoms were less severe but the general reaction was more marked than the local. In the *C* group the symptoms were moderate. Lastly, group *D* showed no appreciable reaction. With the second inoculation the symptoms shown by *A* group were less severe than those shown by *B* and *C* groups. In general the reaction was proportionate to the dose employed. Similarly the quantity of protective substance elaborated seemed to be dependent on the dose employed, in so far at least that the largest dose produced the largest quantity of protective substance; but the general relationship of protective substances to dosage of vaccine does not appear to be in proportion to the differences in dosage, as the values in *B* group were only slightly lower than those of *A* group. There was no evidence that a negative phase was developed. The group *D*, consisting of older men, who had already been inoculated five years before, showed no unusual development of protective substances with small doses of vaccine.

Bassenge and Mayer[40] have prepared an antityphoid vaccine by agitating living bacterial cultures with distilled water. By this method they obtain a fluid, transparent but slightly opalescent, which can be preserved for an indefinite period by the addition of 0·3 to 0·5 per cent of carbolic acid. The general and local reaction obtained from the injection of this fluid is much less marked than that following the use of an emulsion of the microbes. The blood-serum after a single injection becomes so active that it protects guinea-pigs against 15 to 30 times the lethal dose of typhoid bacilli. The serum retains this power for months.

Vaccine Lymph.—Guérin[41] has elaborated a method for estimating the value of glycerinated lymph. The lymph is made as follows. The pulp is mixed with its own weight of glycerin and kept at a low temperature for ten days. Then the pulp is ground up with an equal quantity of fresh glycerin, so that the lymph consists of 1 part pulp to 2 parts glycerin. The method of testing the pulp consists in diluting the lymph with distilled water and inoculating the shaven back of rabbits with 1 cc. of the diluted lymph. The dilutions suggested are 1–100, 1–500, and 1–1000. A very good pulp causes in the dilution of 1–500 a confluent pustular eruption, while in the further dilution of 1–1000 the pustules average only 3 to 4 to the square cm. and remain discrete. Such a lymph is said to be active at 1–1000. A lymph, which is only active at 1–100 is still good, but under this strength it is only mediocre, and, if activity is less than 1–50, the lymph should be rejected.

Several authors state that the active agent of lymph can pass through a Berkefeld filter. Remlinger and Nouri[42] diluted the lymph with twenty-five times its bulk of water, and found that the filtrate, though somewhat slower in its action, produced typical eruptions on animals. Vincent[43] states that the filtrate after being kept for eight

to ten days becomes opaque from the development of a fine bacillus, which does not stain with Gram's method. The filtrate still produced pustules which conferred immunity against vaccination. Rouget[44] found that out of six calves inoculated with filtered vaccine, four proved refractory to subsequent vaccination.

Biehn[45] has used chloroform vapour for sterilizing vaccine virus, according to the method suggested by Green. By means of an aspirator sterile air is passed through chloroform and brought into contact with a very fine watery emulsion of the crude lymph. It is found that four hours' exposure to the vapour is sufficient to destroy most of the common forms of bacteria. The staphylococcus aureus requires five hours, as it is more resistant than the streptococcus. To destroy the vaccinal virus itself requires twenty-four hours. After sterilization for 4 to 6 hours, the chloroform is removed by passing air through the emulsion. The advantages claimed for the method are the great saving in time in preparing a pure lymph, while the resulting lymph keeps better and dries on the skin much more rapidly than glycerinated lymph. Further, once the lymph is sterilized, the action can be stopped, whereas with glycerinated lymph the antiseptic action continues.

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RADIO-ACTIVITY AND ELECTRO-THERAPEUTICS.

BY

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WHILE nothing very startling has marked the work done in 1905 in Radiology and Electrology, yet considerable progress of a general kind has been achieved, and it may be said that we are perceptibly nearer to forming a correct estimation of the real value of radiant energy as a therapeutic agent. The number of diseases to which these physical agents are applied is still steadily increasing, and some very encouraging results have been attained.

RADIO-THERAPEUTICS.

The X-ray treatment of lupus and rodent ulcer has become a matter of routine, and the same might be said of superficial epitheliomata, except that as many of them lend themselves readily to excision, this latter method is employed in a considerable number of cases. While we are very much as we were in respect to the treatment of more or less extensive malignant disease, there are signs of a growing tendency towards co-operation on the part of the surgeon and the radio-therapeutist. Such co-operation is almost certain to be productive of good. After operation for removal of the breast in malignant disease, some surgeons now refer their cases for a course of X-ray treatment over the whole area operated upon, as a further safeguard against recurrence. One of the reasons for the poor success of X-rays in the treatment of malignant growths is the screening effect of the superficial layers, preventing the rays influencing the deeper parts. Under such circumstances, the surgeon would first remove as much as possible of the growth, and the X-rays would be applied vigorously to the base of operation. The aim is thus to convert a deep-seated into a more or less superficial growth, which past experience has shown the X-rays to be capable of influencing favourably. It is to be hoped that, before another year passes away, evidence of the value of this idea may be forthcoming.

With the greatly extended use of Röntgen rays in therapeutics, has arisen a demand for some means of accurately measuring the energy given off by a tube at any time. Many workers have been engaged on this problem, but even the best of the methods devised are only partially successful up to the present.

One of the most remarkable discoveries during the past year is the effect of X-rays on the reproductive organs. It has been discovered that the spermatozoa of a number of habitual X-ray workers became diminished or absent, even in those who had never suffered from dermatitis. Their influence in the female has not been determined,

but there seems no doubt of their power to cause the death, under certain conditions, of the fœtus in utero, judging from an experiment made by Tousey[1] on a pregnant cat. This matter is one which must receive the serious attention of the medical profession, possibly even of the Government. Its practical bearings lie in the protection necessary for X-ray workers, in the possibility of its employment for the sterilization of degenerates under proper supervision, and also in the possible improper use of the rays for the prevention of conception, or as a means of causing the death of the fœtus in utero. It should be noted that ordinary *single* X-ray exposures as employed in diagnosis have no perceptible influence in this way, and any sterility induced by a brief course of X-ray treatment is only transitory. Further, the sterility so induced in males is purely physiological—the physical part of the procreative process being in no way impaired.

As to the other dangers of X-rays, such as the peculiar **Chronic Dermatitis** found among habitual workers, great precautions are now being taken to prevent their occurrence. One of the best methods is to enclose the tube in a shield of X-ray-proof material. At the London Hospital, all the tubes in use are enclosed in shields of glass containing a high percentage of lead, having a window opposite the anode for the escape of the rays. The obstruction to the rays is not perfect, but probably at least 80 per cent are absorbed, and if the operator is careful, as he should be in all cases, to stand *behind* the plane of the anode, there is little danger of his suffering from X-ray exposure. Various gloves, aprons, and fabrics more or less opaque to X-rays can now be obtained, and should be worn by habitual workers when engaged in their duties. With the means now afforded for protection, nothing but gross carelessness will give rise to chronic X-ray dermatitis, and no fresh cases should occur.

The great advantage of glass shields as protectors is that the working of the tube can be watched. Of opaque shields, one of the best is that of Dr. Belot, of Paris. It is made by Gaiffe, and was shown for the first time in this country at the provincial meeting of the British Electro-Therapeutic Society in July last. Nozzles of various sizes and lengths can be attached at will, and there is provided a means of accurately adjusting the tube so that the centre of the anode comes exactly opposite the centre of the opening through which the rays are to escape The material of which the shield is made possesses the quality of opacity to X-rays in a very high degree ; and with a shield of this kind, and the operator taking up a position behind the anode while the tube is in action, there should be no need for lead-covered partitions, and other elaborate devices which have been suggested, especially for those who have never contracted any X-ray lesion. In the case of those who, unfortunately, have already suffered severely, no protection can be too complete or elaborate.

Another matter which would seem to be of importance is that the work should be done in large, well-ventilated rooms. The idea is gaining ground that the continual breathing of *ionized air* is not

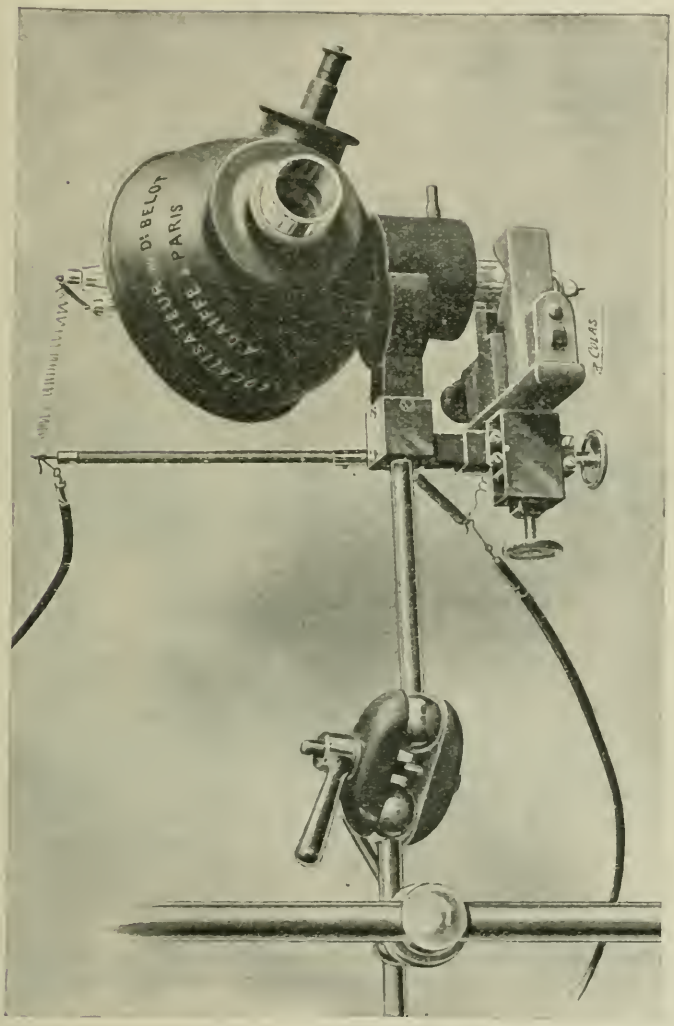


Fig. 1.– Belot's X-ray Shield.

advantageous, and that this is one of the reasons for the presence of the symptoms shown by some X-ray workers: such as dyspepsia, insomnia, irritability of temper, and inability to pursue a continuous line of thought. This is a matter in which some experiments might be made with advantage.

With regard to the treatment of **X-ray Dermatitis,** nothing new in the way of applications has been recorded, but it is stated that elevation of the part affected is of the greatest assistance in hastening recovery. This, after all, is what one would expect, and the wonder is that it was not resorted to at the very beginning.

In regard to the literature of the past year, the number of workers in this branch of therapeutics is large, and all seem to have contributed more or less to the various journals and societies—in fact it may be said to take up a considerable share of the current medical literature. A new edition of "Röntgen Rays in Therapeutics and Diagnosis," by William Allen Pusey and Eugene W. Caldwell (Saunders and Co.) maintains and amplifies the good features of the original edition. It is comprehensive and mainly for the specialist. Another excellent work is "Radio-Therapy and Photo-Therapy, including Radium and High Frequency Currents," by Charles Warrenne Allen, M.D. (London, 1905: Henry Kimpton). This is a very valuable book for those general practitioners who specialize in these subjects. "Light Energy," by Margaret Cleaves, M.D., is an important contribution in actino-therapy. It is a matter for regret that no book of any real importance has yet been published by a British author on X-rays in their application to the treatment of disease.

X-ray Diagnosis.

The literature on this branch of the subject has not been very extensive. This is not due to any declining importance; on the contrary, as a means of diagnosis the X-ray is rivalling the stethoscope and the clinical thermometer. There is no part of the body in which the X-rays may not be of help, as the work of the past year clearly indicates. Professor Maurice Benedikt[2] has shown how X-rays can be of value in the diagnosis of diseases of the head and brain, and in this connection may be mentioned the work of M. H. Cryer[3] on the "Uses of Röntgen Rays in the Studies of Normal and Pathological Anatomy of the Internal Structures of the Face." His paper is illustrated by an excellent series of stereoscopic and ordinary radiograms, and is a valuable contribution to X-ray work.

Stereoscopic fluoroscopy and radiography is becoming increasingly popular, on account of its manifest advantages in the way of localization. In regard to the latter it seems to be displacing the older and more abstrusely mathematical methods, which, while undoubtedly accurate when properly carried out, are too cumbersome and complicated for every-day use. A stereoscopic radiogram enables one to *see* the relative positions of the parts under examination, which is the most any surgeon requires under ordinary circumstances.

In the diagnosis of pulmonary disease the X-ray is slowly but surely becoming a reliable assistance. That the presence of tubercular deposits can be shown, which have escaped detection by all ordinary methods of examination, has been proved beyond doubt. The value of the method was very ably shown by Stanley Green in a paper read before the Electro-Therapeutic Society in July last.

No one has yet been able to demonstrate the presence of biliary calculi by this method—they are very transparent to X-rays, and quite unlike urinary calculi, which are detected fairly easily. The

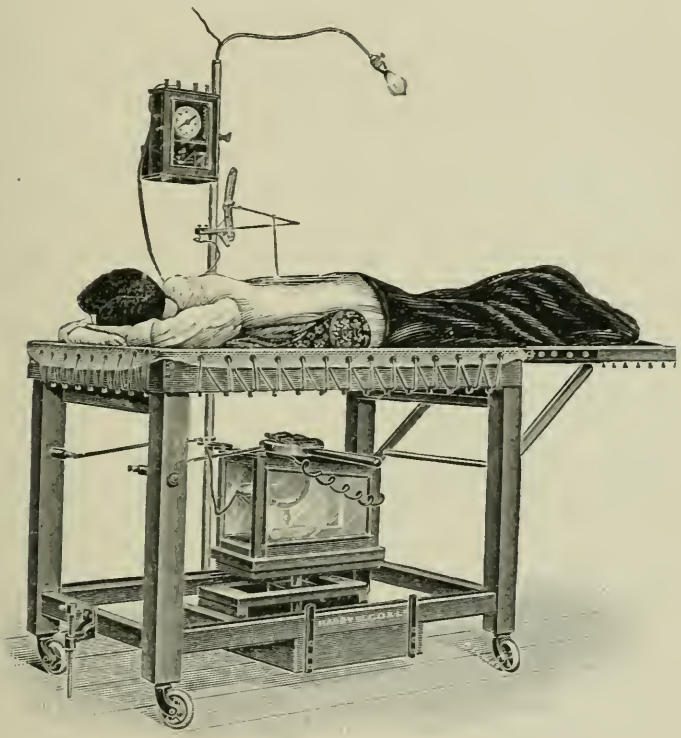


Fig. 2.—Dr. Reid's Couch.

great difficulty in regard to the latter, especially when only small concretions are present, is the movement due to respiration. This is overcome by abolishing abdominal movement, or by allowing the current to pass through the tube at maximum inspiration or expiration. For the former method various forms of compressors combined with diaphragms to cut off extraneous rays have been devised, but while with them very sharp radiographs can be obtained, they suffer from the disadvantage that only a very small area can be radiographed

at each exposure. Another method is to put the patient on his face with an air cushion between the abdomen and the table. The top of the latter and the air cushion must be transparent to X-rays. The tube is placed underneath the table, and the plate is laid on the patient's back; or with the tube above and plate under the patient, who lies on his back, the abdominal movement may be controlled by means of a broad flannel binder across the abdomen and around the bed or mattress. Excellent results can be obtained by either of these methods without the use of elaborate compressors, and the whole urinary tract is included in the radiographic field.

The other idea, of only allowing the current to pass at maximum inspiration or maximum expiration, is not a new one by any means; but a very excellent device for carrying it out satisfactorily, designed by Mr. A. D. Reid, was shown by him at the Leicester meeting of the British Electro-Therapeutic Society. A second and minute clock is linked in with the device, so that it only goes when the current is flowing through the coil. The duration of the several short exposures is thus automatically added together until the total duration is sufficiently long. The couch shown by Mr. Reid is very compact and complete, and very free from complexity, considering its wide range of usefulness. It is adopted for radiography, radioscopy, stereoscopic radiography, and also, with a sterilization screen, for operation for removal of foreign bodies. The act of turning the screen up out of the way cuts off the current from the coil and turns on an incandescent lamp fixed overhead. It can also be arranged as a high-frequency couch when desired. The X-ray tube is enclosed in a box consisting of a wooden framework, the sides being made of thick lead glass, and placed below the patient. On the top of this box is a modified iris diaphragm, which is used to cut off all the rays not required for the radiograph it is desired to make. (*Fig. 2, page 63.*)

Some valuable work has been done on intra-muscular osteomas, by Jones and Morgan [4], and Kienböck [5], in which the Röntgen Rays were of the greatest value.

Apparatus.

Measurement.—In all X-ray work, whether diagnostic or therapeutic, some means of measuring the X-rays given off is of the first importance. The many methods that have been suggested are far from satisfactory. The width of the alternate gap over which a spark will just pass is of no value by itself, giving a rough approximation only of the resistance of the tube. The "radio-chronometer" of Benoist is valuable for giving a rough idea of the penetrability of the rays, but nothing more, and the reading depends on the personal equation of the operator. That of Holzknecht measures the rays that *have passed*, and gives no indication of what *is passing*. It is of value under certain conditions of X-ray treatment which will be indicated later on.

The "Quantinometer" of Kienböck, "for measuring the strength of radio-therapeutic radiations," depends on the action of the rays on

a special reducing paper, which is passed through a standard process of development. It is claimed that "by means of this instrument it is possible to predetermine the degree of reaction of the skin which appears after the latent period, and consequently it enables one to give the correct dose of rays and avoid over-exposure." It is supplied in this country by Mr. Schall.

The measurement of the current passing through the tube is also of very limited value by itself, but that it is useful under certain conditions has been shown by many writers, notably Lewis Jones in this country, and C. L. Leonard of Philadelphia.

Milton Franklin [6] has devised a method which is based on the power of the X-rays to ionize the gases through which they travel. He maintains that such a method gives an absolute index of the activity of the radiation. His instrument consists essentially of an electroscope, enclosed in an X-ray-proof box. One of the "leaves" of the electroscope consists of a stout vertical rod of metal passing through an ebonite partition which divides the box into two unequal compartments, the upper and larger one containing the electroscope. The lower contains the lower end of the rod above mentioned, and another rod placed near to it, which is connected to earth. This lower compartment is provided with a window and shutter, through which the rays are allowed to fall on the space between the ends of the rods, ionizing the air between and causing a leakage from the upper rod to earth. The other leaf is a fine filament attached by one end to the vertical rod about its middle. When this is charged the movable leaf stands out at right angles, and as the charge leaks away it more or less slowly falls to its normal position. This movement is arranged to take place across the end of a tube let in to the side of the upper division of the box, through which the observation is made. The time in seconds which the filament takes to traverse the field is the co-efficient of the strength of the rays. The instrument is used as follows: "The electroscope is charged by means of a rod of ebonite electrified by friction, until the filament has assumed a horizontal position. The electroscope is brought to the same distance from the tube as the patient or plate, and while the tube is running the shutter is opened and the time in seconds occupied by the filament in transit is noted. The number of seconds is the exact co-efficient of energy of the rays, and when compared with any reading made under any circumstances whatever, with a similar instrument, the ratio of energy of the two radiations will equal that of the two times."

Time must prove whether all these claims are justified Are we quite sure that the rays which produce chemical change in photographic plates or physiological change in living tissues are identical with those which produce ionization of air ? This condition if really fulfilled, would certainly give such instruments a very high place in the X-ray outfit. To be of general use they would have to be made identical in every respect, so that readings by different observers could be compared and their procedure imitated. What is wanted

is an instrument which will give a direct reading of the energy given by a tube in action at any moment, in the same way as an ammeter indicates the amount of current flowing in an electric circuit. This particular one has been described at length because it seems to come nearer to the requirements than any other up to the present.

Failing an instrument of this kind, the best method of attaining definite results would appear to be always to use a standard make and design of tube, to keep the resistance of the tube equivalent to a definite spark gap, to use a valve-tube to suppress reverse currents, and to pass the same current through the tube, which should be one provided with means for altering its vacuum when required. Note that the spark gap should be across the terminals of the X-ray tube, the valve tube being connected between the coil and the spark gap. By keeping all the above constant, very fairly uniform results can be obtained, so long as the tube is new; but it is beyond doubt that a tube which has been much used, gives off a different quality and quantity of X-rays from what it did when new, even though the degree of vacuum, as indicated by its resistance, be the same. This was mentioned by Mr. J. Hall-Edwards in a paper read before the Electro-Therapeutic Society on the treatment of rodent ulcer; and in the discussion which followed, the writer of this article was able to corroborate it as a result of experience at the London Hospital, where six sets of apparatus are in more or less constant use. This is one more reason why an instrument indicating the radiant energy of the tube is so desirable.

Recently attention has been given to the question of suppressing the reverse current at "make." There is little doubt that a tube which is subjected to this reverse current to any extent ages rapidly, becoming hard and discoloured, and radiographs made with it show a want of sharpness. Fortunately the matter is not attended with any great difficulty. A ball-and-point adjustable spark-gap answers very well for this purpose. The point is connected to the positive terminal of the coil, and the ball to the anode of the X-ray tube. If the tube shows the presence of reverse current when the ball and point are in contact, they are gradually separated until the hemispherical division of the tube is perfectly clean and sharp. The width of the gap will be about one inch, depending more or less on the size of the coil. The ball and point in fact constitutes a very efficient rectifier, in spite of its extreme simplicity; and, as was shown by Mr. R. S. Wright in a paper read before the Röntgen Society, several years ago, is capable of rectifying the current from a Tesla coil. Another method is to use the Soupape or valve-tube of Villard. The construction of this is such that while allowing current to pass through easily in one direction, it offers a very great resistance to a current coming in the opposite direction. It is very efficient and—unlike the spark-gap—is not noisy. Like an X-ray tube, its resistance tends to increase with use, so that its vacuum has to be reduced from time to time

Coils and Generators.—In the early days of X-ray work the continuous current was thought to be the only one of any use for actuating X-ray apparatus, and those workers whose available supply from the street mains was alternating, were wont to bewail their misfortune and to envy those of their colleagues who possessed an unlimited supply of continuous current. This might be described as the "induction coil period," with its interrupters, condensers, and so on. The present writer has always held that the alternating current is capable of giving the best results in all forms of high-tension work, though how this was to be obtained was not so apparent at first. We are now entering on the "transformer period," and those who have constant current laid on and wish to use these latest generators of high-tension currents, have to make use of a machine to change their supply to alternating, or at least to pulsating. In the *Medical Annual* of last year two forms of high-tension transformers were described and illustrated—that of Gaiffe and that of Koch. The latter has recently somewhat modified the instrument there shown. Instead of using the high-tension rotary rectifier, he inserts a form of Nodon valve in the primary circuit. This suppresses, more or less completely, the waves in one direction, so that the current passing through the primary coil is nearly uni-directional. The effect on the secondary circuit is to make it also uni-directional, and by using a special bi-cathodal tube, nothing further is necessary for X-ray work. When using ordinary tubes some form of valve tube is required to complete the rectification. This arrangement gives very good results, and is quite silent in operation. When it is intended to use the instrument for high-frequency work the valve cell is cut out, allowing the sinusoidal current to pass directly into the primary. The high-tension current is then led to high-frequency apparatus, the *effluve* from which is under perfect control and soft in application. The valve cell requires no attention except to renew the liquid about once in six months. The agents in this country are Messrs. W. Watson and Sons.

Another new form of high-tension generator is what is known as the "Grisson Resonance Apparatus." This is a very remarkable instrument, not only on account of efficiency, but also because of the principles involved in its action. It consists essentially of a reversing commutator, a condenser of large capacity and of special construction, and the induction coil. The continuous current from the mains is led first through the primary of the coil, then to the reverser and condenser, the armatures of which are alternately charged. The primary of the coil, being between the main terminal and the reverser, is traversed by impulses in one direction only. When the self-induction of the circuit, the capacity of the condenser, and speed of reverser, are suitably arranged, a condition of resonance is established which very greatly increases the induction effects in the coil, so that every current impulse through the primary results not only in one secondary discharge, but also all the higher harmonics are transformed without

being damped out. The secondary discharge under such conditions in a large coil, is a very impressive sight, and closely resembles that obtained by means of a Wehnelt break. It is quite uni-directional, and suitable for X-ray work. By inserting the primary coil in one of the leads between the reverser and condenser it is traversed by alternating impulses, resulting in a high-tension alternating current for high-frequency work. It can also be arranged to yield sinusoidal currents for every use for which they are employed in medicine and surgery. The agents for this country are Messrs. Isenthal & Co.,

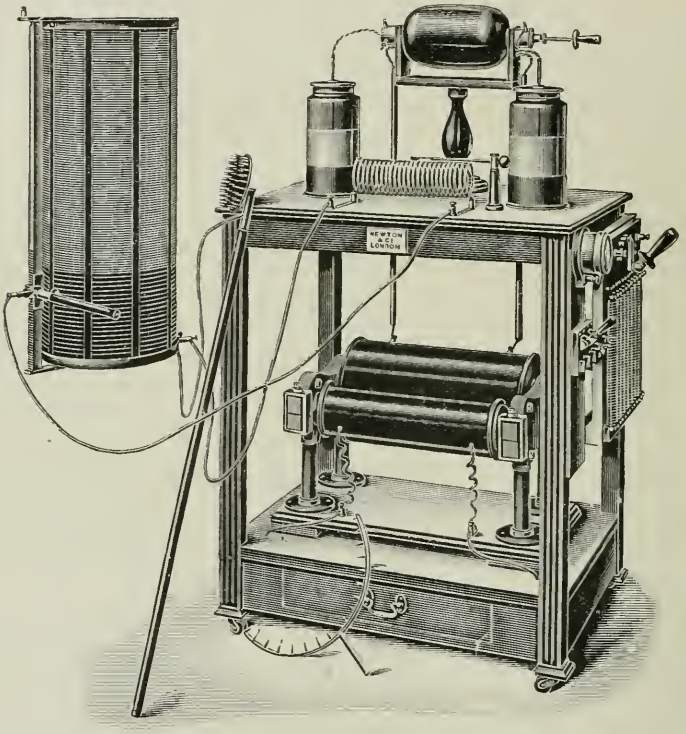


Fig. 3.—Resonance Transformer.

and a good description with diagrams will be found in *Medical Electrology and Radiology*, June, 1905. The complete apparatus is expensive, but existing coils can, with few exceptions, be adapted to this system at a considerable saving.

Recently Mr. R. S. Wright, of the firm of Newton & Co., has designed a new high-tension resonance transformer. It is very much on the same principle as that of Gaiffe, but Mr. Wright claims that it is simpler and more effective than anything at present in use. It is also claimed that it is almost impossible to damage it by any treatment

it is ever likely to receive in practice. *Fig.* 3 gives a general idea of the apparatus as arranged for high-frequency work. The *effluve* from the resonator is very profuse and pleasant in application; and using the condenser couch, a current of 1000 milliamperes is easily obtained. For X-ray work, a valve-tube is used to damp the waves in one direction, allowing the others to pass through the tube. It works quite silently, and the results are all that can be desired. The instrument is intended to work directly from alternating-current mains. Where only continuous current is available a rotary converter must be employed. It takes up little room considering its capabilities, and is much lower in price than those made on the Continent, while it is always an advantage to have apparatus which is made near at

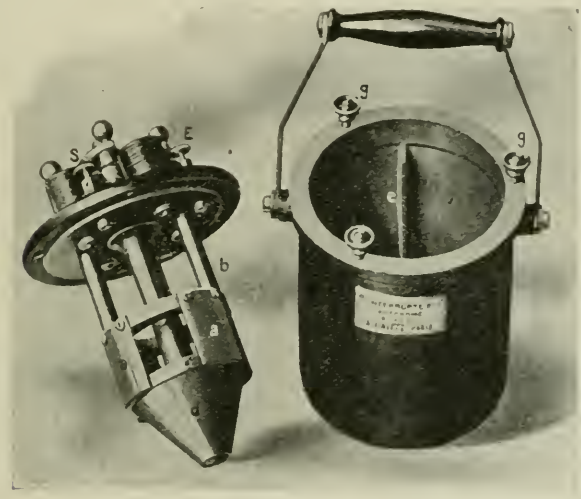


Fig. 4.—Gaiffe's Mercury-jet Break.

home, when possible, as in case of breakdown one is able to go direct to the source, instead of through an agent, with consequent delay which may be inconvenient. This instrument can also be arranged, by using two tubes and a revolving synchronous shutter, to throw images on the screen in stereoscopic relief, which is very valuable as a rapid means of localization.

Interrupters.—Gaiffe has introduced a new form of mercury-jet break, which has several important improvements. In the first place it entirely dispenses with an independent motor. It is simple in construction and positive in action. The jet rotates, while the copper teeth are fixed, and the width of the latter depends on the voltage of the supply. The pumping device consists of a conical iron casting, through which a single canal is made. This is so disposed towards the vertical axis, that when rotated, the mercury, which normally

stands half-way up the canal, is forced upwards to the orifice, which is directed horizontally. Its working parts are shown in *Fig.* 4. The current to the coil is made to pass through the four magnets seen on top of the instrument, so that the break acts both for the coil and the motor. Above the magnets, and secured to the vertical axle, is the iron armature with four teeth, which latter pass very close to the poles of the magnets. Interruption takes place a little before the teeth are in position over the magnet poles. To start work, the current is turned on and the armature given a smart turn by applying the finger to one of the knobs provided for the purpose It is stopped either by stopping the rotation of the armature with the finger, or by switching off the current. Gaiffe strongly recommends absolute alcohol as the dielectric. The container is of iron, and provided with vanes inside to reduce swirling of the mercury and spirit to a minimum. It makes little noise, and will run for months of steady work without requiring cleaning. This break is sure to become popular with users of induction-coils, and not the least of its advantages is that it is the cheapest turbine break on the market at the time of writing.

X-ray Tubes.—It is a matter for regret that among most of the lower-priced tubes, at least, no improvement can be recorded. Some years ago it was possible to get a tube costing no more than a sovereign, that would give very satisfactory results and have a comparatively long life. It seems almost impossible to get such a tube now. The price as a rule is higher—they have vacuum regulators which would account for this—but in spite of these appendages, which are meant to increase the life of the tube, they are less satisfactory. Some of them became practically useless after a dozen applications of ten minutes each. We are speaking now of tubes with bulbs from four to six inches in diameter, and of both British and Continental make. Of the latter kind we have also used the large sizes, costing from four to five pounds or more each. Some three or four were tried, but all gave out very soon, from one cause or another ; though in no instance were the tubes subjected to any other than normal working conditions. On enquiry among our colleagues, we find many complaining of the same thing. This state of affairs is bad enough in private practice ; but in the case of a large and busy hospital department the outlay for renewal of tubes has become a very serious item. Perhaps the manufacturers could give the reason for this ; in any case it is a matter to which they should give serious consideration, as it is usual, in such things, to improve as time goes on.

To turn to the brighter phase of this question, it was a great pleasure to see, at the recent exhibition of the British Medical Association at Leicester, an X-ray tube working continuously for nine hours a day, for the whole five days the exhibition was open. It was a tube of French make, $4\frac{1}{4}$ inch bulb or thereabouts, and the anode and its support were made of stout platinum. The temperature of the anode was never less than a bright red, sometimes nearly incandescent. We were enabled to examine this tube after the close of the meeting. The

glass behind the anode was quite unchanged, while that in front was very faintly tinged—only noticeable on examination against a white ground. There was no marking or distortion of either of the electrodes, and to all intents and purposes the tube was little or none the worse for what was practically forty-five hours of continuous hard work; and the image on the screen was quite as good as that given by a new one with which it was compared. In common with many others, we share a prejudice against tubes with bulbs so small as this, but we have not hesitated to invest in one of these—at the price of £4 4s.—in view of the above excellent performance. The tube is provided with the osmo-regulator of Chabaud, by which its vacuum is reduced. Simple heating with a spirit lamp, or, better still, a Bunsen flame, is all that is required. Except that the tube is a little larger in the bulb, of greater length, and heavier metallic parts, it is very like the original Jackson tube in general appearance. It is noteworthy that the anode and its support for some distance back is made of *stout platinum*, which metal seems to have been almost entirely eliminated from ordinary tubes, and aluminium or nickel substituted. This may account for their poor performance. Certainly no tube we have ever come across with anode and anti-cathode made of aluminium or nickel would have tolerated such treatment as stated above, for more than a very few minutes. The tube is supplied in this country by the Medical Supply Association, Gray's Inn Road, London.

Mr. Cossor has recently brought out a rectifying X-ray tube, which it is claimed works with either alternating or direct current. It is, in a sense, a combined valve and X-ray tube, so that the reverse impulses are suppressed. It is said to have a longer life than the bi-anodal tube in ordinary use.

Blondlot's *n*-rays.

There has been a notable diminution in the number of references to *n*-rays in the medical journals during the past year; the reason being, no doubt, that they have not as yet been shown to be useful in practical medicine. As a matter of scientific interest, however, *n*-rays will always take an important place. Dr. Harry Rainy[7] has written a very interesting article on these rays, which should be referred to by those interested. A full list of the literature on the subject is appended to it.

Therapeutics.

Finsen Light.—The literature on this subject has not been profuse, but at the same time probably more is being done than ever before, resembling in this respect the use of X-rays in diagnosis.

In regard to apparatus, nothing really new has to be recorded. The original Finsen and the Finsen-Reyn lamps maintain their reputation of being the best available. Dr. Sequeira, who is in charge of the Skin and Light Department at the London Hospital, has kindly

furnished us with information on such new modifications of technique as are there regularly employed.

In regard to *exposure*, under no circumstances is this now ever less than one hour. While it is possible to get a reaction with a shorter exposure, experience has shown that such is not enough to destroy the bacteria; stubborn cases sometimes get two hours exposure. Ulcerative cases are first treated by X-rays until they become dry, and finished off with Finsen light. Thick warty lupus is first treated with creosote and salicylic plaster, until the surface is level and even, before applying the Finsen light, by which means much time is saved. As showing how well up to date the department is, the rule with all obstinate cases is to have the opsonic index taken. If this is found to be low, say 0·4 or 0·5, Koch's R.T. tuberculin ($\frac{1}{750}$ to $\frac{1}{100}$) is injected until the opsonic index reaches 1·4 or 1·5. The case now reacts much better, the nodules clear up more quickly, and the patients themselves feel much better for the treatment.

G. H. Graham has been experimenting with *fluorescent bodies*, and at the Leicester meeting of the British Electro-Therapeutic Society read a very interesting paper on "Æsculin in Conjunction with Finsen Light in the Treatment of Lupus Vulgaris." His method is to inject it locally before applying the light. He has shown that twenty minutes after the injection, a fluorescent deposit can be obtained from the urine, and after a single injection this goes on for about forty-eight hours. This artificial fluorescence of the tissues is an attractive subject, and his results will be watched with considerable interest.

Radium has continued to absorb the attention of many scientific observers, and some good results are reported. The amount of literature is not very extensive, but there seems little doubt that radium is gradually taking up a fixed place in our therapeutic armamentarium. From a recent memorandum [8] it would appear that the presence of radio-activity, probably as an emanation, found in some mineral waters, such as Bath and Harrogate, [9] would account for their therapeutic value, since the amount of salts contained is too small to have any effect. It is of course well known that a mineral water, artificially prepared according to an analysis of a natural water, falls very far short of the therapeutic activity of the latter.

It is interesting in this connection to note a suggestion by Tomasini [10] to render drugs, intended to be decomposed within the body, radio-active by radium, or to be charged with the X-rays, thus suggesting a new line of therapeutics which might lead to interesting results.

There have been many attempts to devise new methods of applying the "emanation" of radium. Braunstein [11] renders water, or a powder such as bismuth, radio-active, by distillation and simple exposure respectively. These he finds can be applied freely without producing destruction of normal tissue. London [12] suggests "radium-energized wool." The results of these methods will be awaited with interest.

The question whether radium has any value as a therapeutic agent, not possessed by an X-ray tube, seems still uncertain. The greater

convenience of radium, especially in localities not accessible to the tube, goes without saying. But apart from this, apparently all the effects of radium can be imitated by the X-ray tube. Certainly in its therapeutic applications radium has not shown any superiority in cases where the two could be used with equal convenience.

Messrs. Watson & Sons have designed a new and improved applicator for radium. It consists of a small cup made of quartz, which impedes the passage of the rays very much less than glass, into which the radium is placed, and the whole mounted on a silver backpiece, and hermetically sealed. It is no larger in diameter than a No. 12 catheter, and can be screwed to various forms of applicators, so as to be used in the œsophagus, urethra, etc.

The deleterious influence of radium on animal life has been well demonstrated by London[13], who experimented on frogs and mice. The virus of rabies loses its toxic power in a short time under exposure to radium rays[14]. Werner[15] finds that lesions caused by radium are due to the disintegration of *lecithin*. The latter, when subjected to radium rays and then injected subcutaneously, causes a lesion identical with those produced by intense radium action. Exner[16] also tried the effect of X-rays on lecithin solutions. These, when injected intracutaneously, gave rise to falling of hair and ulceration, even when the solution was sterilized by boiling before use.

As to practical results, Abbe[17] reports a series of cases with varying success, and the following articles may be referred to with advantage: "The Action of Röntgen and Radium Rays," by W. Schaltz[18], "Carcinoma of the Hard Palate Successfully Treated by Radium," by Perugia[19], and "The Therapeutic Action of Radium," by Werner and Hirschel[20].

X-rays.—It was stated at one time, and is still believed by a few, that the rays from a tube excited by a static machine were incapable of producing dermatitis. Such a statement is not true, and ought to be combated out of existence in view of the injury which might be done through undeserved confidence in the idea. Pusey in his treatise says there is not the slightest reason for supposing the rays produced by a static machine to possess any immunity from this risk. Cleveland[21], who uses a static machine to excite the tube, finds no difficulty in producing a dermatitis, and personally we have ourselves produced an X-ray dermatitis in this way. Consequently there is no special "safety" in using a static machine in preference to a coil, nor does it give any excuse for even the smallest laxity in the precautions which ought always to be observed, against the production of an undesired dermatitis.

Chronic X-ray Dermatitis, in the case of those who were so unfortunate as to contract it in the earlier days, still continues to give trouble. No case of recovery from a severe attack has yet been recorded. Mr. J. Hall-Edwards[22], who has suffered severely, contributed a valuable paper on the subject last year, and has followed this up with a further address which was given before the Leicester

meeting of the British Electro-Therapeutic Society in July last. It is to be hoped that there may never be any fresh cases of this obstinate and troublesome condition. Fortunately it is easily and absolutely preventable.

The experience of the last year has been to still further confirm the value of X-rays and radium in the treatment of **Rodent Ulcer.** At the London Hospital some 70 per cent of the cases are cured by this means alone. Cases with a thin edge and ulcerating surface are the most easily dealt with. If the ulcer has a thick warty base, many more applications are required, unless a preliminary scraping is done. by which means much time is saved. The two stereoscopic views of a case under the care of Dr. W. Kenneth Wills are interesting as demonstrating the rapid improvement frequently experienced under this treatment. (*Plate I*) It had been intended to follow the case further, but the death of the patient from intercurrent disease unfortunately prevented this. The following are Dr. Wills' notes of the case:—

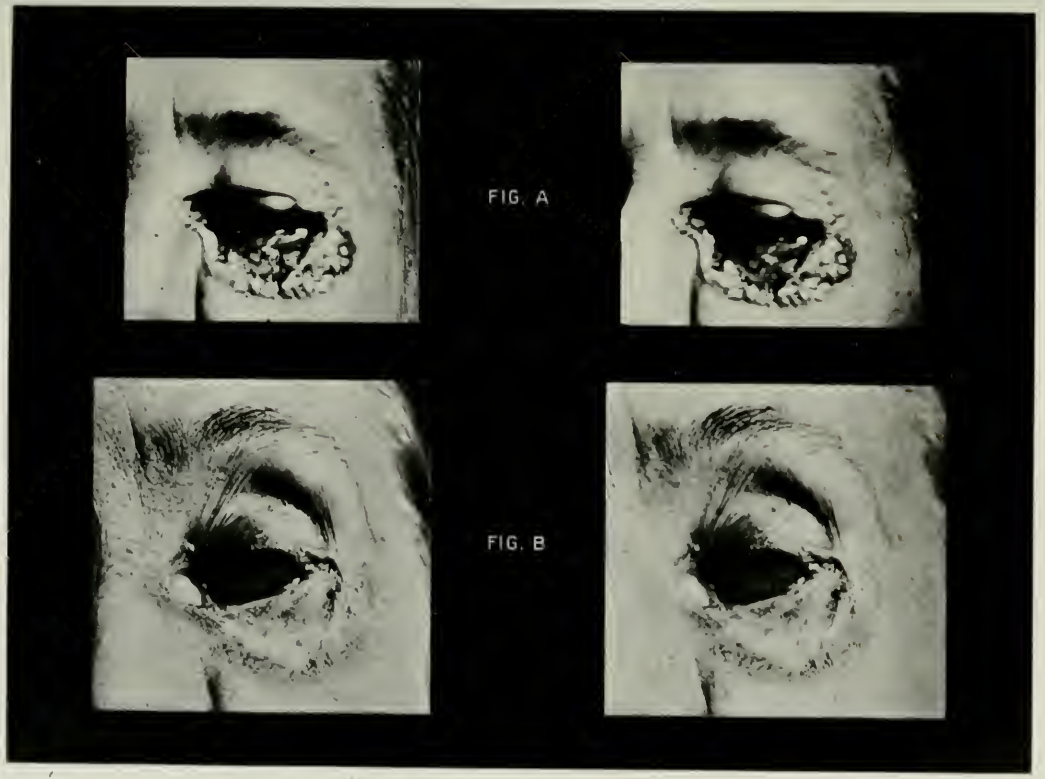
"E. G. L., æt. 57, female, single. Rodent ulcer, of 30 years duration, involving the lower lid of the left eye, which is completely destroyed; the inner and outer canthi, where the raised border is seen, the cartilaginous density of which renders it impossible to raise the upper lid sufficiently to clear the pupil; and the caruncle, which is deeply ulcerated, probably as far as the periosteum. The sight of the eye is not impaired. An operation was performed for the relief of the condition six years ago. After eleven treatments of the X-rays, the condition had improved as in the second photograph. The raised edges can still be seen at the inner and outer canthi: the lid could be raised, however, so as to clear the pupil and allow of sight The eye was not injured in any way by the rays; an attempt, however, was made to shield the eyeball by means of lead foil. The patient at the period shown by the second photograph was operated upon for an internal tumour, and succumbed after the operation, so that the case was never finished."

So far as **Cutaneous Epithelioma** is concerned, the results are practically as good as those of rodent ulcer. C. M. Williams[23] reports eighteen cases, in which ten (55 per cent) showed no recurrence after periods ranging from four months to one year and nine months.

The results in inoperable and deeply-seated **Carcinoma** are of course not so brilliant, but on the whole, results are encouraging and even improving. Leonard[24] reports results of twenty-six cases of malignant disease of the breast treated by him since 1900. Twelve are dead, and two not heard from—probably dead. Of the rest nine remain apparently cured.

Schiff[25] reports "a case of cancer of the mamma cured by means of Röntgen rays." Sections were taken for examination which left no doubt of the nature of the condition, which was also extensive. No other treatment was employed.

There is a growing tendency to co-operation between the surgeon



RODENT ULCER of 30 years' duration, under X-Ray Treatment. *Fig. A*, Stereoscopic Photo taken March 8th, 1905, after three applications; *Fig. B*, The same taken March 29th, 1905.

and radio-therapist, especially in America, as already referred to at the beginning of this article; and theoretically the patient should materially benefit by such combination. In this connection, the following papers should be referred to: "College of Physicians, Philadelphia, Report[26]," "Recent Advances in the Technique of Röntgen-Ray Therapy," by C. L. Leonard[27], and "Radio-therapy and Surgery[28]," by W. J. Morton. The last is very insistent on the danger of over-treatment, and the importance of knowing *when to stop*.

The conclusions he arrives at are very important, and are as follows:—

1. Radiation treatment exerts a retarding effect upon the growth of some cancers.

2. It cures some cases—ratio to operative measures is not here discussed.

3. Pre-operative radiation will increase the ratio of cures by operation.

4. Pre-operative radiation transforms some inoperable cases into operable cases.

5. Pre-operative radiation is recommended as a precautionary measure, probably quite as important as pre-operative antiseptic preparation for surgical operation.

Cleveland[29] reports a very interesting case in which there was malignant disease of the fundus uteri. It was treated successfully by X-rays applied through the abdominal wall. This is a remarkable case in view of the inefficiency of X-ray treatment when applied to internal cancer. It may be that malignant disease of the uterus is peculiarly susceptible to X-rays. We have in our own practice a case of malignant disease of the cervix and broad ligaments which has improved very greatly under X-ray treatment; and this, with the case above quoted, rather suggests such an idea. So far, poor results have been obtained in the treatment of cancer of the floor of the mouth, tonsils, nasal cavity, and lungs. It would seem that the difficulty of exposing these parts directly to the action of the rays was accountable for the inferior results obtained.

X-rays have a decided inhibitory influence on *sarcomatous* growths, and the results, while disappointing in one sense, are such that the method should always be tried in inoperable cases. Skinner[30] reports a successful case, and a paper by Sjögren[31] should be referred to.

A prominent feature of the therapeutic application of X-rays during the past year is that of the treatment of **Leukæmia.** A number of cases have been reported, and the results have been most encouraging. In the majority of them more or less benefit was produced, and a good proportion were apparently cured. The method employed is to use a medium-hard tube, and to apply over the spleen, sternum, the ends of the long bones, and any enlarged glands that may be present. Each part is exposed for about twenty minutes, once or twice a week, but some observers have given much longer exposures. The following results have been observed: Increase in the number of red corpuscles,

decrease in number of leucocytes, reduction in size of spleen, improvement in patient's general state, and a gain in weight. A marked increase in the number of hæmocytes has been observed four hours after the application by Aubertin and Beaujard[32]. Linser and Helber[33] have shown by experiment on animals that X-rays have a very destructive effect on leucocytes. Ledingham and McKerron[34] describe a case of myelogenous leukæmia much improved by X-rays, and give a complete list of the literature to date of writing. The following papers should also be referred to: "Treatment of Leukæmia and Pseudo-leukæmia by the X-rays," by Arthur Holding[35], 'A case of Spleno-medullary Leucocythæmia treated with X-rays," by W. Ironside Bruce[36].

The X-ray treatment of **Ringworm,** while not new, has made great advances, in popularity at least, during the past year. So successful is it, that preparations are being made for dealing with cases in a wholesale manner, both here and on the Continent. We are much indebted to Sabouraud and Noire[37] for an elaboration of the technique. Papers by Adamson[38] and Batten[39] may be referred to with advantage.

Many cases of **Localized Tuberculosis** seem amenable to X-ray treatment, as the following papers will show: "Tuberculous Synovitis treated by the Röntgen Rays," by Alex. Gregor[40]; "Tuberculous Testicle and the X-ray," by W. B. De Garmo[41]; "Treatment of Tubercular Glands by X-ray[42]." Some useful statistics are given by J. Rudis-Jicinski[43].

Jamieson[44] gives a further report on the use of the X-rays in **Mycosis Fungoides.** Marqués[45] reports a case of intractable **Psoriasis** apparently completely cured by X-rays. Personally we have found the result most satisfactory in the only case of psoriasis in which we have tried X-ray treatment.

Space does not permit mention of all the diseases in which X-ray treatment has been tried, with varying results, but the result of the year's work has been the more firmly to establish the claim of X-rays to be considered a therapeutic agent of the first importance. What is most gratifying, is to find it so very helpful in the treatment of so many diseases which formerly resisted all ordinary therapeutic measures.

ELECTRO-THERAPEUTICS.

It would seem from a mere glance over the literary contributions on treatment by physical agents, that electro-therapeutics proper were undergoing a partial eclipse, so greatly are they overshadowed by the voluminous writing relating to radio-therapeutics. As a matter of fact, there is more electrical treatment practised now than ever before. There are a number of specialists working at the subject very seriously, and now no hospital that has the least pretensions to being up to modern requirements, is without a more or less complete electrical department. Several of such departments have been installed during the past year.

Of the works published on Medical Electricity during this period,

that of Lewis Jones[46] stands first in importance. It has been prepared with such care, accuracy, and thoroughness as to give it all the dignity of a standard work. Of scarcely less importance is the new edition of Dawson Turner's excellent work[47], which appeared in the early part of the year. The present writer has contributed his mite in the form of a small book[48] for the use of students and junior practitioners.

While we have heard a great deal about various forms of high-frequency and high-tension currents, it cannot be said that they have displaced the more familiar constant and faradic currents. It may be safely stated that the ordinary portable combined battery is still the most useful single piece of apparatus in the hands of the electro-therapeutist. As to the constant or continuous current, nothing specially new is to be recorded in the way of general or local applications through the skin, though a paper by Brower[49] may be read with advantage. Its value mainly lies in reminding us of many conditions where the continuous current is known to be useful, but where, for some reason, it does not always occur to us to make use of it.

Electrolysis.—Some workers are busy investigating the value of metallic electrolysis in certain local conditions, such as rodent ulcer. The electrodes are usually of zinc, or zinc and mercury. Kem[50] of Philadelphia reports a successful case of **Inoperable Sarcoma** of the pelvis. In the same journal will be found cases of **Chronic Ulcers** successfully dealt with by this method. Mr. J. Hall-Edwards[51] has mentioned it as one of the best methods of rendering a **Rodent Ulcer** aseptic, and that **Small Ulcers**, at least, can be cured by this treatment alone. No doubt further information on the value of the method will be soon forthcoming.

The zinc or zinc-mercury electrolysis can be carried out by means of pads of lint saturated with a solution of zinc chloride, for instance. The latter method is often called cataphoresis, or electric osmosis. This method of introducing drugs locally is, of course, too elaborate for ordinary use, but there are many instances where it possesses decided advantages. A paper by Brower[49] gives some instances of this. In our own experiments we have found it very useful in assisting the removal of inflammatory products, especially in **Old Joint and Bone Injuries** with persistent pain and stiffness. Iodine dissolved in a solution of potass. iodid. was used. The employment of a 1 per cent solution of quinine hydrochloride, or sodium salicylate, by this method, has given good results in intractable **Facial Neuralgia** when other methods had failed to give relief. These instances are referred to here, not because they are new, but rather as an instance of the revival of an old method which for various reasons had been allowed to fall into disuse.

The faradic current as obtained from an induction coil, while very useful and efficient for the purposes for which it is designed, has always suffered from certain defects, chiefly when used for accurate investigation, owing to the impossibility of exactly reproducing any given set of conditions with another, or even with the same instrument. Further,

in application, the current from some coils is unpleasant and even painful. One of the side-issues of the important work on the nervous system which is summarized in the Marshall-Hall Address of 1905, by Henry Head, was an enquiry into the cause underlying the fact that the current from some coils was painful, while that from others was free from this unpleasant stimulation. It was the writer's good fortune to be to some extent associated with Drs. Head and Lewis Jones in this work, and the results[52] are most interesting. By using a revolving commutator suitably constructed, all the advantages of a coil can be obtained without its disadvantages; current strong enough for testing is quite painless, and the same set of conditions can be reproduced on this or any other similar instrument with the greatest

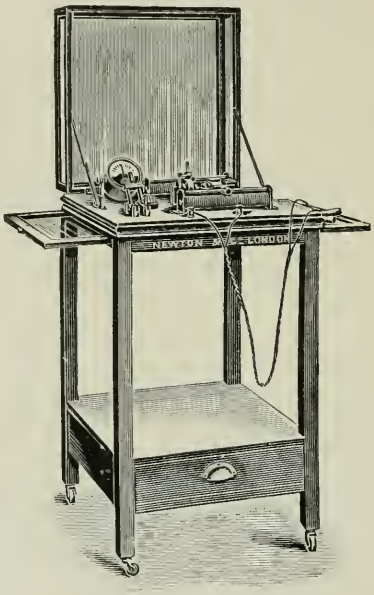


Fig. 5.

ease. A great advantage is that the amount of current passing through the patient's circuit, alternating as well as continuous, is accurately measured. It is very likely that these commutator currents will eventually displace the induction coil, for all accurate work at least. *Fig.* 5 shows a convenient table for consulting-room use, worked from the continuous-current main, which was designed by the writer, and is made by Newton & Co.

As a means of what is called "general electrization," the *sinusoidal current full bath* is slowly but surely increasing in reputation. It has important tonic and sedative effects, and is easily borne by patients who are intolerant of electricity in any other form. In this connection

—apart from the books already mentioned—the reader is referred to a paper by A. Dingwall Fordyce[53]. Its influence on the circulation has been studied by Reilingh[54] and Franze[55] of Nauheim, where it is now used as an adjunct to the standard Nauheim treatment.

For the treatment of **Paralysed Muscles,** as well as atonic conditions of parts composed largely of unstriped muscular tissue, the writer is of the opinion that ordinary *sinusoidal current* of very low periodicity—say one to three or four cycles per second—will be found most efficient. Such experiments as have been tried point strongly that way, but owing to delay in obtaining a machine of special design for this purpose, no results have been published as yet.

High-frequency Currents.—The amount of literature on this branch of electro-therapeutics has shown a considerable falling off. As a method of general electrization it does not seem to have proved as efficient as was once thought, and we are now passing through an opposite phase to the boom of a few years ago. It is doubtful if the cause of electro-therapeutics has been furthered amongst the profession by the advent of high-frequency up to the present. The most extravagant claims were put forth in support of this form of electrization, which were based on insufficient knowledge of the subject; disappointment was sure to follow; and this, coupled with its wholesale exploitation all over the country by unqualified persons, brought about the present neglect of high-frequency. Yet there is no doubt that the method has a certain definite value, and when once the profession realize the extent of good it is really able to do, the whole subject will occupy a position more satisfactory to all concerned.

So far as our own experience goes, one of the greatest advantages possessed by high-frequency currents as a means of general electrization (auto-condensation or auto-conduction) lies in its power to **Reduce Blood Pressure.** All the cases we can recall which have received distinct benefit from this method, have been those whose blood-pressure was above the normal. On the other hand, cases in which the blood-pressure is already low are not improved, and occasionally the symptoms are aggravated. Somerville[56] has had some success in the treatment of insomnia by this method. That the treatment is not unattended with danger is shown by a case reported by Ironside Bruce[57].

The greatest value of the high-frequency current will probably be found to lie in its use as a local application. Applied by means of a metallic brush or condenser electrode, it acts as a local stimulant, bringing about an amount of reaction in the part, which is under perfect control, and appears to possess properties peculiar to itself. In **Alopecia Areata,** we have had complete success in a case where every form of local stimulant had been applied over a period of years without the least benefit being derived. Other cases under treatment are also doing well. Another instance is that of **Acne Vulgaris,** where the same method of application has given excellent immediate results. How far these will be permanent it is yet too soon to say, but the treatment has decided advantages over those usually employed. Personally we have

had the best results with vacuum electrodes, having a moderate degree of vacuum, and showing a violet glow when in use.

Imbert[58] has found high-frequency of great value in **Tinnitus Aurium.**

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Part II.—The Dictionary of Treatment.

A REVIEW OF MEDICAL AND SURGICAL PROGRESS FOR 1905.

By Many Contributors.

GENERAL REVIEW.

Anæsthesia.—The work of the past year in the field of anæsthetics illustrates well the endeavour of the anæsthetist, not only to attain perfect results in practice, but also to foretell exactly the differing effects his drugs produce in differing cases, and to prevent or overcome undesirable incidents, not only during anæsthesia but also during convalescence immediately after operation. We find thus, in examining the year's work, some important investigations upon such subjects as the relation of anæsthetics to shock, the delayed effects of chloroform poisoning, the blood-changes produced by ether inhalation in man and the lower animals, as well as articles upon the more trodden lines of investigation, such as concern the exact percentage dosage of chloroform, and the pneumonias following anæsthesia.

With the increasing safety, facility, and indications for the performance of long operations, particularly within the abdomen, the question of shock becomes more and more of vital importance. It is obviously poor comfort that perfect asepsis should be maintained, and perfect control of hæmorrhage secured, if the patient nevertheless succumb to the shock of operation. That the conditions of anæsthesia play an important part, both in preventing and in aggravating shock, is becoming more and more recognized. Mr. Lockhart Mummery's recent Hunterian Lectures on the "Physiology and Treatment of Surgical Shock and Collapse" contained frequent references to this point, and may well be consulted by readers interested. The evidence, both physiological and clinical, seems to point to a complete abandonment of the old view that the deeper the anæsthesia the less the shock. It seems certain that with chloroform, at any rate, a sufficiently deep anæsthesia prolonged for long enough time, can itself produce, apart from any operation, all the symptoms of profound shock. The practical lesson is that time should be economized as much as possible during operation.

As regards the most recent important addition to the commonly-used anæsthetics, ethyl-chloride, the chief point to be noticed is the increasing record of fatal cases. Its portability and rapidity of action undoubtedly led many practitioners into a false idea of its extreme convenience and perfect safety. They must now recognize that in

point of safety it is not on the same plane with nitrous oxide. The question of dosage has to be carefully considered, and the prevalence of after-effects also borne in mind.—[J. B.]

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Dermatology.—During 1905 the two matters which have attracted most attention are the systematic treatment of Ringworm by X-rays, and the "vaccine" treatment of certain diseases. The former, introduced on a regular system by Sabouraud at the Ecole Laille, has been taken up practically everywhere, and although we are far from having achieved altogether satisfactory results, the general outlook is hopeful, and the prospects of this obstinate disease becoming more manageable are good. The treatment has been introduced on a large scale in the Ringworm Schools of the Metropolitan Asylums Board, and Dr. Colcott Fox's report on its working will be read with much interest.

The term "vaccine" treatment is used for lack of a better term. In its application to tuberculosis it is only the old method more scientifically applied, but the use of Wright's vaccine in acne and in furunculosis is new. The treatment is promising, but it has not yet been long enough tested to enable one to speak definitely. Unfortunately the technique is complicated, and only when the new treatment has established its position as *facile princeps* will the busy man readily turn to it.—[N.W.]

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Diseases of Children.—One of the most notable advances in connection with infant feeding has been the adoption recently in America of certain standards of bacterial purity which are fixed by Medical societies in different parts of the country; by satisfying these standards the milk or cream vendor can have his milk or cream "certified," and the customer can thus obtain a more or less certain guarantee of the purity of the article he buys, although of course a higher price must be paid for milk or cream thus safe-guarded. One of the most important papers of the year on infant feeding was one by Holt, on the dangers arising from the use of too high a fat percentage. He showed that rickets, convulsions, marasmus, and other disorders may be produced in this way.

The etiology of infantile diarrhœa has been studied most carefully and admirably by several observers at the Rockefeller Institute, and their report recently issued shows that the Shiga bacillus or bacillus dysenteriæ, is to be found in a large proportion of the cases of diarrhœa in infancy; but it would perhaps be premature to assert that this micro-organism bears a causal relation to the diarrhœa in all cases, and even more rash to attach any great value to the serum treatment which some of these observers have tried. Holt, however, considers this serum to be worthy of further trial, as good results followed its use in some cases.

Congenital hypertrophy of the pylorus has attracted much notice

recently, and whereas operative measures were at first believed to be almost inevitable if life was to be saved, there is increasing evidence that many cases recover with such simple measures as washing out the stomach daily, or even by very careful dieting, or by the administration of opium in minute doses.

The value of salicylates in chorea is mentioned by various observers, and amongst other drugs recently used with success, morphine may be specially mentioned.

In the treatment of whooping-cough some interesting results have been obtained by Kilmer with an elastic abdominal belt, which, by its support to the abdomen, seems to prevent vomiting and perhaps even to shorten the disease. Fluoroform, given frequently, has recently been found to reduce the number of paroxysms very effectually.—[G.F.S.]

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General Medicine.—As one attempts to review annually for the purpose of this volume the progress which has been made by medicine as a whole, one is struck by the fact that each year the disorders of some one organ or system have been, so to speak, the fashion, and that the medical literature of the year shows an unusually large number of papers dealing with them. From this focussing of the general attention for a time on some one subject, progress undoubtedly results; fresh facts and statistics are collected, and opinion as to the value of different methods of treatment becomes more settled.

In past years one has had to record a focussing of attention upon cancer, the prevention of tuberculosis and open-air treatment upon disorders of the Blood, the Nauheim treatment of myocardial affections, the therapeutic value of the X-rays, Organo-therapy, and so forth. This year it would seem that disorders of the Stomach have been the fashion; to borrow religious phraseology, there has been a distinct 'revival' in this branch. For this the results of gastric surgery, and in particular of the operation of gastro-enterostomy, are mainly responsible. Indirectly, however, medicine in the narrower sense has benefited; for the unique opportunity which the operating surgeon has of handling and studying the stomach has enabled him to add to our knowledge both of its physiology and pathology. In various sections of the *Annual* some of the advances in these directions are summarized.

In other departments also one can chronicle distinct progress. Thus we seem gradually to be getting clearer ideas upon the "infective" group of joint diseases, and to be learning more as to their pathology—knowledge which cannot fail to react upon treatment. In the department of dietetics the striking experiments of Chittenden, published last year, have thrown an entirely fresh light upon the fundamental problems of that branch of physiology and, if finally established, are bound to have far-reaching results in the treatment, and even more in the prevention of disease.

In the department of immunity, the results of the opsonic treatment and of von Behring's alleged cure for tuberculosis will be awaited with the highest interest.—[R. H.]

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General Surgery.—The past year seems to have been singularly deficient in any marked changes or advances in the domain of general surgery. Spinal anæsthesia has not been much used, but local anæsthesia, with eucaine and adrenalin in England, and stovaine abroad, seems to be much more employed than formerly. In arterio-venous aneurisms the use of Matas' method is suggested by Bickham, of New York, and this method would seem to be well worth a trial in suitable cases.

In innominate aneurisms surgery is giving much better results, as in the last 6 cases reported, 5 recovered; these results are apparently due to the greater attention paid to asepsis.

Sclavo's serum for cases of anthrax has been used in several cases in England with good results, and it should certainly be used where possible in cases of cutaneous anthrax.

Mr. W. Sampson-Handley reports further researches as to the lines of spread of infection in mammary cancer. His views are somewhat novel, but are well supported by the evidence he brings forward, and are of vital importance to all surgeons.

Operation for the presence of foreign bodies in the bronchi has hitherto given very mediocre results, but Killian's method of bronchoscopy seems to show that the mortality attending the accident may be much less in the future. He records 16 successful cases of removal of foreign bodies from the bronchi by this method.

Surgical interference in fractures of the patella seems to be gaining ground, and the results are undoubtedly better if the patella is wired and sepsis is avoided. In rupture of the quadriceps extensor tendon operation is strongly recommended. Lockhart Mummery's Hunterian lectures on shock should be read by all hospital surgeons and their house surgeons.—[P.L.]

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Infective Fevers.—The most recent and important work in this department is to be found in the researches that have been carried on by various observers into the nature of the contagion of small-pox, though, unfortunately, it can hardly be said that the results obtained are quite conclusive.

The use of cold baths in the treatment of small-pox, scarlet fever, and typhoid finds many advocates, and in the latter disease copious water drinking has been followed by favourable results.—[E. W. G.]

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Nervous Diseases.—In the treatment of tetanus, further experience confirms the views as to the undoubted value of antitetanic serum. The

efficacy of this remedy, however, is often increased by the supplementary administration of other drugs. Among the less commonly recognized diseases, intermittent limp has acquired greater prominence, and its treatment by vaso-dilators is called for, once the diagnosis has been established. But the nervous disease which has acquired the greatest prominence within the past year is epidemic cerebrospinal meningitis, whose diagnosis and treatment are discussed in the present volume. Considerable attention has also been paid to rabies, in connection with the discovery of Negri's bodies. If future observations are confirmatory as to the constancy of these bodies in the brains of rabid animals, we shall have a means of rapid diagnosis which may supplant the necessarily slow method of first inoculating other animals, and then waiting to observe whether rabies develops or not. Sea-sickness, paralysis agitans, sciatica, are all diseases presenting therapeutic difficulties, and recent remedies are discussed which have been recommended in these diseases.—[P. S.]

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Obstetrics and Gynæcology.—The past year is a notable one on account of the large amount of work that has been done, both as regards the theoretical and practical aspects of obstetrics and gynæcology.

The able advocacy of vaginal tamponage, in cases of accidental hæmorrhage by the so-called "Dublin School," has caused this method of treatment to take the first place amongst the various measures used to combat this emergency.

Increasing experience in the use of steel dilators for procuring rapid dilatation of the cervix in certain cases of obstetric difficulty, especially eclampsia, has placed this treatment on a more assured footing, whilst the still more vigorous measure of vaginal Cæsarean section (originally advocated by Duhrssen), has begun to assume a more prominent place in the practical field.

An enormous amount of work on eclampsia has seen the light, but the views of the various authorities still differ on important details, from whatever standpoint the disease is regarded.

The treatment by thyroid extract, as advised by Nicholson, is still under trial, and it is yet too early to form a definite opinion.

The subject of puerperal fever has engaged the attention of several British workers, both from the etiological, curative, and preventive standpoints. It is deplorable that, in spite of modern teaching, the yearly mortality caused by this disease still remains where it did.

In Gynæcology a paper by Professor Wertheim, read at the Annual Meeting of the British Medical Association, is perhaps the most striking feature of the year. A *résumé* of this paper, considerably revised by the author, with accompanying illustrations will be found on a later page. In it Professor Wertheim expounds views and methods founded on the treatment of several hundred cases of carcinoma of the cervix by extensive abdominal operations, which have for their object not only

the ablation of the diseased organ, but of the pelvic connective tissue as well. That these methods will be followed by certain English gynæcologists in the near future is assured.

The pathology of myomata, with special reference to the practical question of operation or no operation in these cases, has been further investigated, and a more correct estimate of the dangers attendant on these tumours has been the result.

A great controversy has raged and still rages round the question as to the relative values of total and sub-total hysterectomy, as a routine method of treatment in such of these cases as require operative measures. The chief contention of the advocates of total hysterectomy, namely, that the cervical stump is specially liable to carcinomatous degeneration is however not proved.

Much work has also been done in the pathology of extra-uterine gestation, and also on the origin of certain ovarian cysts from degenerate or otherwise altered corpora lutea.

Several new operations have been devised for the cure of retroversion and prolapse respectively. This we have learnt to expect nowadays, but none of them appear to offer better chances of permanent relief than the more established and older procedures. There is an increasing tendency to submit these cases to operation rather than the more tedious treatment by the pessary.

Such then are the more prominent landmarks which distinguish the year just past, but one may say that there is scarcely any branch of gynæcology which has not received some attention. In short, there is a gratifying increase in the production of home-made research, which we think is in great measure due to the stimulus given to English obstetricians by the founding of a British Journal of Obstetrics and Gynæcology.—[A. E. G. and V. B.]

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Ophthalmology.—The connection between cerebral pathology and visual defects is illustrated by cases of congenital word-blindness, to which Hinshelwood first called attention some years ago. Until recently these have been looked upon as a rare curiosity, but they are now found to be more common than anyone suspected, a fact the knowledge of which we owe largely to the systematic attention which has recently been paid to the eyesight of children attending elementary schools in London. Word-blindness has also been described by Gibson, of Brisbane, as an acquired condition, associated with right hemianopsia, and caused by a lesion of the occipital lobe involving the left calcarine fissure.

Another instance of the connection between cerebral disease and ophthalmology has recently gained an increased significance from the point of view of treatment. As mentioned in the article on optic neuritis, the importance of early trephining in order to relieve pressure in cases of cerebral tumour accompanied by optic neuritis has now been proved.

Bacteriology and the theory of immunity grow in importance year by year to the ophthalmic surgeon. Even the pathology of senile cataract has been dealt with from the point of view of serum investigations and Ehrlich's theory of immunity (by Römer, of Würzburg). A subject of more immediate practical importance is the necessity for a thorough cleansing of the conjunctival sac before operations by mechanical removal of micro-organisms by free douching, rather than by the employment of strong antiseptics, and the question whether before operation a special search for the more virulent organisms, such as pneumococcus, should not be made. It must always be remembered that an intact corneal epithelium is the first and chief line of defence against virulent organisms. A simple abrasion of the cornea may become an infective hypopyon ulcer if pneumococci are present in the conjunctival sac.

It is not necessary to make any particular reference here to new drugs, except to mention that the organic salts of silver, and especially argyrol, continue to find favour in the treatment of conjunctivitis of all sorts, though there are some surgeons who still pin their faith almost entirely to nitrate of silver.

As mentioned in last year's *Annual*, the alleged power of radium to restore sight to the blind is a fable. Nevertheless it appears, on the authority of Darier, to possess certain definite analgesic powers. That surgeon has had several cases of patients suffering from pains in the eye from various causes, relieved, either temporarily or permanently by the external application of a packet containing 240 units of a radio-active substance. How far these results are due to suggestion, and how far they are of permanent value, time and experience of the analgesic properties of radium in other fields of surgery will show. Radium has also been used in the treatment of trachoma, a disease which appears to offer a field for the employment of so many of the newer therapeutic measures.—[A. H T.]

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Rectal Surgery.—A study of the literature of the past year upon this subject shows that steady progress is being made in those directions where it is most needed. The least satisfactory department of rectal surgery has always been the treatment of rectal cancer. The results of operation for rectal cancer have fallen behind the results obtained from operation for cancer in some other parts of the body, such as the breast and uterus. This is partly accounted for by the difficulties of diagnosis when cancer is situated high up in the bowel, and partly by the technique of the operations usually employed, which made a septic wound almost inevitable.

The greatest advance is seen in the use of the sigmoidoscope for direct observation of lesions in the upper rectum and sigmoid flexure, lesions which without the use of this instrument could not be reached, and would have to be diagnosed from the symptoms alone.

Signs are not wanting that great improvement in the technique

of the operation for rectal cancer is now in progress. Operations are being devised by which aseptic healing of the wound is at any rate possible; and the discussion upon this subject which was opened by Sir Chas. Ball at the Annual Meeting of the British Medical Association has given a stimulus to further progress in this direction, and we may safely predict considerable improvement in the results of the operation for rectal cancer in the near future.—[P. L. M.]

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Tropical Diseases.—Not only those devoted more especially to the study of tropical medicine, but the world of medicine and science as a whole, has to deplore the death on Feb. 27th, 1905, of that distinguished and enthusiastic investigator, Dr. J. E. Dutton. His name will always be associated with the human trypanosome, *T. gambiense* (Dutton), and in this year's *résumé* we have to record his independent discovery in co-operation with Dr. J. L. Todd of the cause of human tick fever in Africa. Last year we were able to announce that Ross and Milne had discovered spirochætes in tick fever, and this year we record Dutton and Todd's independent discovery and further work on the transmission of the disease by the tick *Ornithodorus moubata* (Murray). So far it appears that this disease is in fact relapsing fever, and that the spirochæte is *S. obermeieri*, but this is not yet absolutely certain. The disease has been shown to be transmissible by ticks, adult and nymphs, and also by bed bugs (Todd).* Koch has found the spirochætes in the eggs of the tick, but whether the spirochætes undergo a developmental cycle is as yet unknown. Koch's results on the development of trypanosomes and *Piroplasma sp.* are also of great interest and importance. In the case of trypanosomes he finds in the stomach of tsetse flies, male and female forms, but their further fate is uncertain; forms are also met with which suggest a schizogony as in the asexual cycle of the malarial parasite. In the case of piroplasma, Koch finds forms in the stomach of ticks entirely different from those seen in the blood, and some of these suggest a copulatory stage. So far he has not found them in the egg or young nymph. Koch asserts that forms suggesting a copulation stage occur in the egg and larva.

In another branch of tropical parasitology the most interesting discovery is that of a new human blood fluke independently by Katsurada and Catto. It belongs to the same family as the *Schistosomum* (Bilharzia) *hæmatobium*, but differs from this in many respects, and especially in that its eggs have no spine. The fluke is of considerable importance, as it gives rise to severe endemic disease in Japan, of which enlargement of the spleen and liver, and diarrhœa, with eggs in the fæces, are the most striking signs.

Several additions have recently been made to our list of the hæmatozoa; thus hæmogregarines have been described in the leucocytes of

*According to Low the ill-famed "Karapata" tick fever of Tete, on the Zambesi, is also due to spirochætes.

dogs by Bentley and James, in the leucocytes of cats by Patton—both in India—and in the red cells of the Indian field mouse by Christophers, in those of the African jerboa by Balfour, and finally a protozoon so far unclassified in the red cells of the European mole by Graham-Smith.—[J. W. W. S.]

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Venereal Diseases.—Attention continues to be directed to the general infection of the body with the gonococcus, a subject which has only attracted notice within the past few years. It is now known that no tissue or organ in the body is immune from this pyæmic invasion. Space has been devoted to this subject in previous issues of the *Medical Annual*, and a few references are to be found in a later page in the present volume.

In an interesting article Dr. Emmet Holt discusses the question of gonococcus infection in children, and makes special reference to the hospital management of these cases. The subject is not a new one, although the literature dealing with it is scanty, but Dr. Holt presents the results of his experience in an instructive form.

No very striking advance has been recorded during the past year in the treatment of gonorrhœal urethritis.

Drugs, such as novargon, ionogen, and arhovin, require further observation before assuming their proper place among the large variety already at our disposal.—[J.W.T.W.]

ABDOMEN (Surgery of). *A. W. Mayo Robson, D.Sc., F.R.C.S.*

Treatment of Post-operative Vomiting by Gastric Lavage.—It is not an exaggeration to say that persistent post-operative vomiting is one of the most dangerous complications with which the surgeon and patient have to contend. According to Charles S. White[1] it is due directly to the anæsthetic, absorbed and discharged into the stomach, and **Gastric Lavage** will remove this irritating substance, thereby preventing nausea and vomiting. The method which has given him uniformly good results has been lavage of the stomach, immediately after the anæsthetic is stopped and before the patient leaves the table. There are three conditions in which this prophylactic treatment is indicated :—

1. In cases where there has not been sufficient time to prepare the patient. Such patients often have their stomach distended with food.

2. In cases where the anæsthetic lasts an hour or longer. Operations of short duration are usually not followed by vomiting.

3. In cases where the patient previous to operation has suffered with attacks of nausea and vomiting or chronic gastritis.

The treatment is contra-indicated in operations upon the stomach, and in very young children.

In those cases in which vomiting occurs in spite of lavage, absolute rest of the stomach brings the best results. If the vomiting does not then subside, wash out the stomach with boric acid solution. This is

the most satisfactory method, and usually is sufficient to cure the most obstinate case.

Combined Transverse and Longitudinal Incision in Laparotomy.—Lewis A. Stimson[2] advocates this method. Rapin was the first to substitute a transverse incision through the skin for a cosmetic purpose ; Küstner conceived the same plan independently about two years later, and was the first to publish it. Pfannenstiel was the first to plan, execute, and publish the method of a transverse incision through the aponeuroses for the purpose of maintaining the solidity of the abdominal wall and preventing post-operative hernia. Hartmann conceived the method independently and first practised it in May, 1900. But a matter of much more general interest is the availability, and the efficiency, of the operation. Are its results such as are claimed for it ? Does it permit an adequate exposure of the abdominal cavity ? Has it disadvantages which offset its advantages ?

These questions can be answered only by the test of experience in many hands ; and that test is rapidly making, if it be not already made. Stimson's own use of it has been continuous in two hospitals, and of late exclusive whenever there has been occasion to open the lower segment of the abdomen widely, in the male as well as in the female. Three of his colleagues at the New York Hospital have also used it freely, but only in operations upon the appendages. A few have used it with increasing frequency and satisfaction in other hospitals in the same city. Charles G. Cumston, of Boston, wrote last September to say that he had employed it in 247 cases, and that it was used by others in that city. Menge[3] reports 32 cases, in operations upon the uterus and its appendages, and thinks it will greatly restrict the use of colpotomy and median abdominal section. Among its advantages he counts a greater protection of the intestines from exposure and easier access to the pre-uterine space ; and while he thinks Douglas's pouch is not so easily reached, yet he found no difficulty in doing all therein that needed to be done. Apparently he has not employed it in any case of uterine carcinoma or large solid tumour. And although all his wounds healed *per primam*, he thinks the chance of infection and suppuration of the parietal wound may be greater than with the median incision.

Stimson's personal experience covers its use in at least 150 cases. The great majority were operations upon the uterine appendages, but they included several total and supravaginal hysterectomies for fibroid and carcinoma, several ectopic gestations, two cases of gunshot wound of the intestines (both recovering), resection of the intestine, intestinal obstruction, and a few explorations.

The first step—the opening of the abdomen—requires a little more time than does the median incision, and so too may its closing. But the total excess is small, not more than five minutes. The line of the incision is a shallow curve, concavity upward, and crosses the median line three or four c.ms. above the symphysis pubis. The sides extend towards the anterior superior spines, but stop well short of them, the

extent depending upon the purpose of the operation and the amount of fat in the abdominal wall. Sometimes a total length of three inches is sufficient. When the incision needs to be lengthened, either at the beginning or in the course of the operation, the prolongation is made more upward than outward

The aponeurosis of the external oblique, having been exposed throughout, is divided in the line of the incision, as is also that of the internal oblique or "sheath of the rectus." The knife may be used for this, or, very conveniently after the division of the central portion, the scissors. Occasionally, the muscular fibres of the internal oblique extend further inward than usual, overlying the outer portion of the rectus, and are involved in the cut. Then lifting the central portion of the aponeurotic flap with forceps, it is freed upward with the knife along the linea alba and the outer border of the pyramidales until those muscles have been passed, then rapidly freed on each side from the rectus by stripping with the fingers, and the separation along the median line is completed with the knife, taking care to keep the edge close to the surface of the muscle so as not to thin or possibly button-hole the flap. One or two arteries running from the rectus to the aponeurosis need to be secured; except for these, the separation of the flap is bloodless. The incision of the aponeurosis is generally not carried beyond the outer border of the rectus, and, if more room is needed, the extension is along that border upward rather than transversely.

The flap is then drawn sharply upward, and the abdomen opened in the median line in the usual manner. It is easy to extend this separation of the flap and the median opening to the umbilicus, but, of course, that cannot be passed. Length for length, the median incision thus relieved from the lateral resistance of the aponeurosis gives a wider opening and freer access to the abdomen than when made in the usual manner.

In two or three of the earlier cases, where more room seemed needed, the flap was split in the median line and the incision prolonged upward. This tardy abandonment of the plan and reversion to the old method was accomplished with ease; and the only cost to the patient—the superfluous transverse incision and the stripping-up of the flap—led to no recognizable ill results. Occasionally, when the umbilicus was unusually high and much room would surely be needed, the transverse incision was made about an inch higher than above described, and some additional space secured by a short median cut in the aponeurosis downward towards the symphysis.

The operation having been completed, the wound is closed by suture of the peritoneum and of the aponeurotic layer posterior to the recti wherever it can be readily identified and secured; and if the recti tend to fall apart, two or three points of suture may be placed in them. The aponeurotic flap is secured in place by chromic catgut sutures for an inch or two on each side of the median line, and the remainder by plain catgut, interrupted or continuous. Sometimes the two layers are united separately, and sometimes (especially if anxious to save time)

they are included in the same sutures. It seems to be a matter of indifference whether or not their exact reunion is effected, since the pull of their muscles has little or no tendency to separate the sides of the incision. The skin is closed as usual.

The space beneath the aponeurotic flap is drained for a day or two with rubber-tissue strips introduced on either side. When drainage of the abdominal cavity was needed, and was not provided for through the vagina, it has been effected through the centre of the incision ; and, although in several cases such a drain has been long maintained, no hernial protrusion has resulted.

The scar has been inconspicuous and freely movable in all except one case, and has shown very little of that broadening which is so common after median incision. In that case, a very fat woman, the scar retracted deeply. In no case has any weakness of the abdominal wall, or any tendency to hernial protrusion, manifested itself ; and a consideration of the anatomical conditions and of the factors productive of such weakness seems to justify the confident anticipation of its absence. The scar of the longitudinal portion of the incision is not subjected to the pull of the lateral muscles, which is so important a factor in widening that left by a median incision through the aponeurosis, and the action of intestinal distention is efficiently met by the aponeurotic sheet unbroken except where it is guarded by underlying muscle.

Finally, Stimson recommends the method as one easy of execution, ample for any abdominal work that can be done through a median incision below the umbilicus, easy of repair, and affording apparently complete protection against post-operative ventral hernia.

For other articles on Abdominal Surgery see Appendicitis, Duodenum, Gall-Bladder, Hernia, Intestines, Jejunostomy, Liver, Omentum, Pancreas, Peritonitis, Spleen, Stomach, Urachus.

References.—[1]*Ann. Surg.* Aug. 1904 ; [2]*Ibid* ; [3]*Centr. Chir.* 1903, p. 954.

ACCIDENTAL HÆMORRHAGE. (*See* Pregnancy.)

ACNE VULGARIS. *Norman Walker, M.D.*
F. Gardiner, M.D.

G. T. Jackson[1] lays great stress on the importance of the seborrhœic element, and believes that the views of Sabouraud and Gilchrist will soon be in accord, "That a special form of micro-organism will produce acne between the ages of twelve and twenty-four, and not before or afterwards.' He remarks : "Many seem opposed to the claim that it is the cause of the disease, but such action is not unique." Ringworm of the scalp, for instance, disappears at the age of sixteen or seventeen. Still the importance of personal hygiene and plain diet should be enforced. "The young men should forswear tobacco and the young women tight-lacing." **Curetting, Lancing,** and the use of the **Comedo-extractor** are highly recommended. Wills[2] is even more insistent on the need of attention to errors of diet and alimentary disorders. Fats, especially that of pork or bacon, are specially harmful. He administers **Ichthyol** internally, and externally applies a weak **Sulphur** and **Ichthyol**

Ointment. Friction is useful but not until all pustules have been removed by lancing or otherwise. He considers the comedo-extractor too irritating, and prefers to use a needle, but we fancy this proceeding will at times be impossible, and have yet to see a skilfully applied extractor cause much irritation. Macleod[3] gives a full account of this affection. Youth, he considers, is a most important etiological factor, and he is not inclined to believe in a parasitic cause. The comedo is described as simply a horny plug, shaped like an oat, and composed of concentrically arranged lamellæ enclosing a mass of sebaceous material, twisted up lanugo hairs, and a certain amount of diffuse pigment at its outer extremity.

As regards treatment, he holds that puncturing the pustules diminishes the after scarring. When the pus is expelled he introduces a pointed match impregnated with **Carbolic Acid,** very cautiously, as otherwise scarring may result. After the pustular lesions have been removed a boracic fomentation or compress of peroxide of hydrogen is applied for half an hour, then a powder composed of :—

R	Ac. borici Pulv. amyli		Sulph. præcip.	āā pts. æq.

To be dusted on.

Massage and friction with the hand dipped in warm water is employed in most cases. He rather deprecates the use of X-rays and Finsen light. **Zinc** and **Sulphur Lotions** are preferable to ointments. Sulphur soap, or one containing Peru balsam, should be lathered on with a shaving-brush, the lather being allowed to stay on for a few minutes at the first application, but longer on future occasions. If this last treatment, however, as is sometimes the case, proves too irritating it must be interrupted and a cold cream applied. Unna's resorcin shelling paste or Lassar's less known formula :—

R	Naphthol (β) Sulph. præcip.	ʒi ʒiv	Saponis virid. Ung. aq. rosæ	ʒii ʒii

may be necessary in some cases, and either is applied for a few days only, and then the part dusted with zinc oxide and starch. Small pustules are often troublesome, and these may be caused to abort by the employment of a plaster mull containing 2 per cent of carbolic acid and 2 per cent of mercury. He also points out that the seborrhœic condition of the scalp must be attended to Cases are generally readily improved, but the necessary after treatment is too often neglected.

For the patchy erythema remaining he advises :—

R	Calaminæ prep. Zinci oxidi Glycerini	gr. xv gr. x ℳ xxx	Aq. calcis Aquæ destill.	ʒi ʒi

To be applied as a compress for a quarter of an hour several times a day.

The erythema is thus reduced, but a dry, scaly skin is left, and this is to be treated by ung. aquæ rosæ.

For some time after the acne has disappeared and the erythema subsided, it is important to apply a weak antiseptic lotion to the face to diminish the chance of recurrence. Such a lotion as 1 per cent **Resorcin**, with 2 per cent **Perchloride of Mercury** in spirit is dabbed over the face, and after it has dried the following powder :—

R	Sulph. præcip. Calaminæ prep.	Zinci oxidi	āā pts. æq.

is dusted on.

Wright[4] has used with success the injection of **Antistaphylococcic Vaccine** in several cases of acne. This vaccine, described shortly in last year's *Medical Annual*, is made by keeping cultures of these germs at 60°, which kills them, but does not alter their chemical properties ; as an extra safeguard a small quantity of carbolic acid is added. To use his own words : " In fighting against a bacterial disease there are only two methods, either antiseptics or dependence on protective agents elaborated by the organism for destruction of the bacteria." He finds that these protective substances are less in the blood of an affected patient.

By means described in his articles he estimates the protective strength of the serum, and counts the number of organisms he injects. The dose is carefully graduated according to the reaction, which is as carefully tested. He states that every patient who has had acne and been inoculated has got distinctly better, but it is not surprising to hear that comedones remain and relapses occur, because if the bacillus of acne is the cause it would seem more rational to treat with the vaccine of this bacillus, at least after pustules caused by staphylococci have disappeared.

References.—[1]*Med. Rec. N.Y.* Mar. 18, 1904 ; [2]*Bristol Med. and Surg. Jour.* June, 1905 ; [3]*Clin. Jour.* June 14, 1905 ; [4]*Brit Jour. of Derm.* Aug. 1904.

ACTINOMYCOSIS. *Priestley Leech, M.D., F.R.C.S.*

Several cases of this disease have been reported during the last year. Two cases of actinomycosis of the skin are reported[1] at the Victoria Hospital for Children. In both the infection seemed to be primary in the skin, and **Scraping** seemed to have more effect on the growth than the administration of iodide of potassium. Knox[2] reports two cases in two members of the same family, the sister eighteen years of age, and the brother fifteen ; the girl died with symptoms of involvement of the lung, and the boy improved under treatment ; a third member of the family had a suspicious abscess, which cleared up. The source of infection seemed to be a farm where they had stayed for their holidays. **Potassium Iodide** seemed to have a favourable influence in all three cases.

Bell[3], of Montreal, reports ten cases of actinomycosis in human beings in Canada. Bevan[4], of Chicago, reported six cases. In the discussion which followed, Ochsner[5] suggested that surgeons should follow the treatment carried out by veterinary surgeons on animals, except that in late cases in cattle the animal was killed. In the early

stages an effort was made to remove the entire mass by **Excision** or by splitting it open and curetting it, followed by the administration of **Iodide of Potassium** in a definite way. Large quantities were given several days in succession, and then interrupted for a week, giving the spores time to develop into the fungus, after which they repeated the iodide of potassium for three days, then withdrew it for a week again, and repeated it; in cases where the actinomycosis was localized, the cattle would recover. He now gives 90 grains of iodide of potash in half a pint of hot milk, followed by a pint of hot water at six in the morning, two in the afternoon, and ten at night, for as many days as the patient can bear it up to one week; it is then withdrawn for a week, after which it is repeated for three or four days, then withdrawn again, and repeated once a month; the reason for repeating it is that in one patient who appeared cured the disease relapsed after he had ceased taking the iodide. Attention was drawn to the danger of the operator infecting himself, and other speakers said the disease might lie dormant for some time, to be apparently cured, but break out later on.

REFERENCES.—[1]*Lancet*, Oct. 29, 1904; [2]*Ibid*; [3]*Montr. Med. Jour.* Feb. 1905; [4]*Ann. Surg.* May, 1905; [5]*Ibid*, April, 1905.

ACUTE POLYOMYOSITIS. (*See* DERMATO-MYOSITIS.)

ALBUMINURIA. *Prof. J. Rose Bradford, D.Sc., M.D.*

Albumoses are found in small quantities in the urine under a number of different conditions, but the presence of albumoses in large quantity in the urine would seem to be peculiarly associated with the disease of bones known as multiple myeloma, and hence this condition of the urine is often known as myelopathic albumosuria, or Bence Jones' disease, or Kahler's disease. Bence Jones described the urinary changes in the year 1848, but the bone disease was first described by McIntyre in the *Medico-Chirurgical Transactions* of 1850. Little attention was paid to the condition until Kahler re-described the disease in 1889. In the earlier cases the clinical diagnosis had often been osteomalacia, but Kahler showed that in his case a round-celled sarcoma of the bone marrow was present.

Moffatt[1] records another instance of the disease, together with a summary of the recorded cases now amounting to 39. It is probable that the disease is really much more common than it is usually thought to be, as the clinical symptoms are often vague and indefinite. In some instances the first symptom to attract notice is the detection of the proteid in the urine, but in other instances the first symptoms are those dependent on the changes in the bony skeleton, such as pain in the back and in the lumbar region, and sometimes even the giving way under a violent effort of some bone in the chest. It would seem that in some instances multiple myeloma may occur without the characteristic urinary disease, and Collins[2] records such a case. In this patient the bones were found to contain post mortem a number of tumour masses, but the urine never showed either the presence of

albumoses or albumin. According to Moffatt, multiple myeloma without even intermittent albumosuria does occur. On the other hand, Bence Jones' albumosuria is always associated with disease of the bone marrow, whether symptoms referable to the osseous system are present or not, and further, the appearance of this form of albumosuria is always of fatal import. The most characteristic symptoms of multiple myeloma are increasing weakness and anæmia, together with pain in the back and sides ; spontaneous fractures of the ribs frequently occur, together with deformity of the dorsal and lumbar vertebrae. Actual tumours may sometimes be felt growing from the ribs. As a rule, the abnormal condition of the urine is not detected until the patient has sought advice for other symptoms. The disease may be confounded with osteomalacia, caries, and malignant disease of the spinal cord, pernicious anæmia, nephritis, chyluria. The most characteristic urinary change is the presence of the Bence Jones' albumose, but serum albumin may also be present. The albumose may be confounded with serum albumin because both substances are coagulated by heat in acid urine and by mineral acids, but there are really marked differences in the behaviour of these two proteids to the ordinary urinary reagents. Bence Jones' albumose coagulates at a lower temperature than that necessary to coagulate serum albumin ; the former coagulates at 58°, the latter at 75°. One of the most characteristic differences is the well known fact, that the coagulum, formed at 58° in the case of the Bence Jones' albumose is redissolved when the fluid is heated to boiling point. Hydrochloric acid also causes a precipitation. Bence Jones' albumose and nitric acid do the same, but both these coagula are more or less completely dissolved on raising the urine to boiling point. Moffatt states that there is a difference in the coagulation of the albumose produced by ferrocyanide of potassium and acetic acid to that seen with the same reagent with serum albumin. With serum albumin the coagulation is immediate, but in the case of Bence Jones' albumosuria there is first a turbidity which gradually increases in density, so that the coagulum is not obtained until after the lapse of several hours.

One of the most definite varieties of functional albuminuria is the postural or orthostatic. This variety of albuminuria may, as Sutherland[3] states, be described as functional in character, postural in origin, and adolescent in regard to the period of life when it most frequently occurs. The influence of posture in the production of albuminuria is shown by the fact, that if such patients are put to bed the albumin will disappear notwithstanding the diet given, and even violent massage will fail to lead to the production of albuminuria as long as the patient is recumbent. On the other hand the albuminuria will reappear so soon as the patient is allowed to assume the upright posture. In most instances the albuminuria is at its maximum in the morning and diminishes as the day goes on, so that in the late afternoon it may disappear notwithstanding the fact that the upright posture is maintained. Where the albuminuria occurs on the

assumption of the upright posture it can be made to disappear by recumbency, and it reappears a second time if the patient be allowed to get up. The fact that it disappears in the course of the day would seem to show that it cannot be due directly to the effects of gravity, and that some other factor must be present as well. Sutherland notes that in a considerable number of cases movable kidney is present. It is difficult, however, to think that this can be the cause of the condition, inasmuch as movable kidney is so much more common in women than in men, whereas this orthostatic albuminuria is more especially seen in boys about the age of puberty. It would seem probable that in many cases it is correlated with some functional disturbance of the vasomotor system.

The interpretation of the significance of the presence of albumin in the urine is often difficult at the extremes of life, and perhaps albuminuria is too often attributed to serious renal disease both in young adults and in the aged. Austin[4] examined the urine of 45 men varying in age from sixty-four to ninety-five, the greater number being over seventy. In 16 cases mucinuria was present, in 9 cases serum albumin was found, and in 10 both serum albumin and mucin were found. None of the patients presenting albuminuria were definitely ill, although many suffered from the infirmities of age. In the 9 cases presenting albuminuria, in only 3 were hyaline and granular casts present, in the other 6 there were pus, prostatic cells, and cells of the renal pelvis. It is probable that prostatic catarrh, and mild pyelitis and pyelo-nephritis were present in these cases. Austin concludes that albuminuria and mucinuria are both of them common in old men, and that the latter is more frequent than the former; and further, that the changes in the urinary tract are frequently not of a grave character, and that the albuminuria is only rarely associated with the more serious degenerative diseases of the kidney.

Among the varieties of functional albuminuria there is one of a transitory form that has been associated with diet, and to which the term alimentary albuminuria is applicable. The amount of albumin in the urine in these cases is often very small and not readily detected by ordinary tests, but minute traces of albumin can be recognized by the new test of employing the corresponding antiserum. Thus a solution of egg albumen can be precipitated by the addition of a small quantity of the serum of an animal that has been rendered so to say immune to egg albumen. This precipitin test is one of great delicacy, and by its aid not only very small quantities of albumin may be recognized, but evidence may also be obtained as regards the nature and source of the albumin. This excretion of certain proteids by the urine is mainly of theoretical importance. Bonfanti has found that egg albumen appears in the urine of 6 out of 10 presumably healthy persons after the ingestion of four eggs; and he also states that the proteids of certain forms of meat, as, for instance, veal, may be found in the urine after a meal. It would seem that the proteids

of eggs are much more liable to reappear in the urine after their ingestion than the proteids of meat, even beef.

Ascoli has obtained results which point to the conclusion that these proteids may sometimes pass through the walls of the alimentary canal and get into the circulation, inasmuch as they may be recognized as such in the blood.

References—.[1]*Lancet* Jan. 28, 1905; [2]*Med. Rec. New York*, April 29, 1905; [3]*Clin. Jour.*, Oct. 12, 1904; [4]*Boston Med. and Surg. Jour.* July, 1905.

ALBUMINURIA OF PREGNANCY. (*See* Pregnancy.)

ALCOHOLISM. *Purves Stewart, M.D.*

The effect of repeated **Hypnotic Suggestion** in the treatment of the drink craving has been so encouraging in certain cases, that various Russian municipalities have caused clinics to be established for the treatment of inebriates by this means. Such institutions, we learn[1], are now at work in St. Petersburg, Moscow, Saratoff, Kieff, Ekaterinoslav, and Astrakhan. The results obtained by the Moscow institution, which has been in existence now for over three years, are stated to have been that out of a series of some 300 cases 22 per cent of the patients were cured. On the other hand, from the dispensary of Ekaterinoslav we are told that out of 323 patients hypnotized, 84·4 per cent refrained from alcohol for a week, 60·2 per cent for two weeks, 33·8 per cent for three weeks, 27·7 per cent for more than a month, and only 3·1 per cent during the whole time of treatment, which lasted 6 months. This is less striking than the Moscow figures, where the patients were watched for a year after treatment. Possibly variations in results are due, in part, to the individual hypnotic "operators." Korovine, of the Moscow Asylum for Inebriates, considers that in severe cases hypnotic suggestion must be supplemented by indoor treatment under restraint.

Forel, of Zürich, who has had considerable experience in this method of treatment, is no longer content with suggesting to drunkards, whilst in the hypnotic state, that they should give up drink. This suggestion, though beneficial, is often inefficacious owing to the overwhelming hourly antagonistic suggestions of the man's habits, environment, and companions. Consequently Forel, when hypnotizing the drunkard, does not merely suggest to him abstinence from alcohol, but also enjoins him to change his social surroundings, to associate with non-drinkers, and finally to join a temperance society.

In the St. Petersburg clinic, the patients are hypnotized at first three times a week, and, as the suggestions take effect, the séances are diminished. The results of these Russian experiments will be watched with interest.

In studying the evil effects of alcoholic excess upon the nervous system, it is important to take note of the previous history of the patient, and more especially of the process whereby he arrived at his present condition. In this connection Crothers[2] draws a sharp distinction between "alcoholism" and "inebriety." The term inebriety is

used to describe the state of patients who are stupid or demented from alcohol or other narcotic drugs, whereas "alcoholism" refers to conditions which are specifically due to alcohol as a predisposing cause. A patient who, having previously been temperate, begins after a severe head-injury or after a protracted fever, to drink spirits to excess, is not an alcoholic, but an inebriate. Here the use of alcohol is a symptom of some profound central lesion, and not the disease itself. The sudden appearance of the alcoholic craving is a symptom of distress demanding relief.

The true alcoholics, on the other hand, are those who have been accustomed from early life to drink alcohol with their meals, or to take it as a medicine for all pains and disorders. An inebriate, that is, a man who takes to alcohol to which he had not originally been accustomed, is not necessarily cured by the withdrawal of this drug. On the contrary, its removal may disclose other latent diseases of a serious type. Such cases must be treated by endeavouring to discover the cause of the underlying exhaustion. If this be conquered, the inebriate may be permanently cured. On the other hand, although an alcoholic can be temporarily relieved by long abstinence and suitable environment, his cure, in the sense of removing the cause, is impossible. He retains his alcoholic constitution to the end of his life, and tends to transmit a defective and degenerate constitution to his offspring.

REFERENCES.—[1]*Lancet*, July 23, 1904; [2]*Med. Rec.* Sept. 3, 1904.

ALOPECIA.

Norman Walker, M.D.

Waldo[1], criticizing Sabouraud's micro-bacillus theory, quotes the late William Anderson as saying that coronal baldness starts at a definite spot, significantly coinciding with the point where the sutures close, also at the most distal points of the nerves and blood-vessels of the scalp It occurs, moreover, in men, and especially among the educated classes who wear tight head gear, many being in absolute health and unaffected by seborrhœa. Women, on the contrary, are equally subject to the parasitic forms of baldness. He considers that seborrhœa has more to do with baldness at the sides. For seborrhœic baldness he recommends the daily application of **Black Soap** mixed with **Spirits of Wine** and a little **Thymol** until the condition disappears.

He lays down the following rules: (1) That men and women should wash their scalp with soap and water at least once a week, and more especially after each visit to the barber; (2) That brushes and combs should be occasionally soaked in 5 per cent carbolic acid; (3) That the scalp should be kneaded daily. As an application to make the hair grow, he advises acetic acid and resorcin made up with Eau de Cologne, to be rubbed well in with flannel. X-rays are sometimes helpful.

Brocq[2] recommends two lotions:—

First, a strong;

℞ Chloral hydrat. 5 | Glacial acetic acid parts 1–4
Ether 25

Second, a weak;

R	Chloral hydrat.	1–4	Glacial acetic acid	parts ½–2
	Ether	25		

References.—[1]*Bris. Med. Jour.* June, 1905; [2]*Gaz. des Hôp.* Aug. 5, 1905.

ALOPECIA AREATA. *Norman Walker, M.D.*

Kromayer[1] uses the modified **Finsen Lamp** with **Iron Electrodes** in this condition. The rays from this are not so penetrating as those from carbon electrodes, but can produce in a few seconds an erythema lasting for weeks. The therapeutic value of the iron light depends on blue-violet and long waved ultra-violet rays, as well as a large number of short-waved ultra-violet rays. These last rays lend to this lamp its activity, but have little penetrating power, and hence are of more value superficially. Further, the light is cool, and does not require a compression lens. Large areas of skin can thus be exposed. Six cases, after having been vigorously treated by other means without success, were tried as follows: All parts of the head were exposed for four minutes on fourteen successive days, and then rested for reaction. Some cases required repetition of the treatment, but all were eventually cured. He believes the effect is one of pure inflammatory reaction, and suggests its use in chronic eczema.

This treatment has been carried out for the last two years at the Royal Infirmary, Edinburgh. The London Hospital Lamp has been used, and the results in this and some other conditions have been very satisfactory. Generally the patient has been kept at six inches distance, and an exposure of an hour.

In a later communication[2] he relates his experience of 33 further cases, which he divides into two groups, the one including the slighter cases where less than half the head was affected, and the other the more extensive ones. The first group contains 13, the second 20 cases. He has increased the amount of current up to 25 amperes, and this reduces the time of treatment so that he can now treat the entire head in less than an hour.

In the slighter cases the results were uniformly good. Of the 20 severe cases 5, of which only one was total alopecia, proved obstinate.

In all his cases together the failures are about 15 per cent, and he claims that in this method we have the best and most certain remedy for alopecia areata.

Eddowes[3] reports a case of alopecia in band form in a young woman suffering from seborrhœa. The spreading margin had the appearance of an extremely mild coccogenic sycosis. No club-shaped stumps were present, and hairs extracted showed moist adherent sheaths.

References.—[1]*Deut. Med. Woch.* July 28, 1904; [2]*Monats. f. Prakt. Derm.* July 1, 1905; [3]*Brit. Jour. of Derm.* Mar. 1905.

AMBLYOPIA. (*See* Optic Nerve.)

AMŒBÆ. (*See* Dysentery.)

AMPUTATION (Interscapulo-thoracic). *Priestley Leech, M.D., F.R.C.S.*

Berger[1] analyses a report made by Jeanbrau and Riche on the duration of life after the interscapulo-thoracic amputation for malignant growths of the shoulder and the upper extremity. The report is based on 188 collected cases; the primary or operative mortality is very low (2·75 per cent) in cases where the humerus alone is involved: it becomes serious (11·25 per cent) when the disease has originated in the scapula or the soft parts. In regard to the remote results, in cases of sarcoma, recurrence followed in 48·38 per cent of the cases in which the humerus was affected, and in 66·66 per cent of cases in which the scapula or surrounding structures had been the original seat of the disease. The most favourable cases are those of myeloid sarcoma. An instance of freedom from recurrence after seven years in a case of myxo-sarcoma of the humerus is given. Interscapulo-thoracic amputation is regarded as justifiable in cases of chondroma of the humerus, as local extirpation and conservative surgery in this form of tumour are followed by frequent recurrences and an unfavourable change in its structural character. The most favourable indication for this operation is presented by malignant tumour of the upper extremity of the humerus, when the disease is recognized in good time and promptly submitted to surgical treatment.

Farrar Cobb[2] reports a successful case of this amputation for sarcoma of the humerus: the disease recurred. He draws attention to injecting the nerve trunks with cocaine before their division, and tying the vessels to prevent loss of blood.

REFERENCES.—[1]*Bull. et Mém. de la Soc. de Chir. de Paris*, No. 16, 1905; [2]*Ann. Surg.* Feb. 1905.

ANÆMIA. *Robt. Hutchison, M.D.*

Uncertainty is still felt as to the relative advantages of organic and inorganic preparations of iron in the treatment of anæmia. Halliburton, has investigated the therapeutic value of hæmoglobin preparations, with a view to throwing light upon one side of the problem. As a result of his investigations he believes that **Hæmoglobin** is a useful substance for the purpose of combating ordinary secondary anæmia. Experimenting on rats with crystalline oxyhæmoglobin from dogs' blood, he found that it seemed to increase the number of the red blood cells and the total amount of hæmoglobin in the blood, and he believes that the greater portion of the absorption of the iron from the hæmoglobin takes place in the extreme pyloric end of the stomach, and in the first few inches of the duodenum, the spleen being the principal organ for the storage of the iron. It is not absorbed as such, but is converted in the stomach into acid hæmatin. This substance is certainly quite difficult of absorption, but is still further influenced by the pancreatic juice, which rapidly dissolves it, forming alkaline hæmatin, which is readily diffusible through an animal membrane. Probably, therefore, the greatest amount of the substance is absorbed through the lower portion of the duodenum, where the reaction is distinctly alkaline.

Tirard[2], Walsh[3], and Murrell[4] all write in praise of the organic preparation known as **Ovoferrin** (iron-vitellin). They find that it has a marked power of increasing the number of red cells and the amount of hæmoglobin in the blood, and that it is well tolerated by patients who are unable to take the inorganic preparations. Ovoferrin was devised by Barnes and Hille, of Philadelphia, and is prepared as follows :—A 10 per cent solution of serum albumin is heated for one hour in an autoclave under pressure at a temperature of 120 degrees centigrade, with a 10 per cent solution of iron tartrate ; a precipitate is formed which is separated by filtration. The clear solution is evaporated to one-half its volume and mixed with an equal part of 95 per cent alcohol ; this causes a reddish-brown precipitate. After several hours the supernatant liquid is drawn off, the precipitate collected and washed several times with water and dilute alcohol to remove impurities. This finished product is a reddish-brown powder, which contains 8 per cent of iron, is freely soluble in water, odourless and tasteless.

One of the most interesting features of this new body is its negative behaviour towards all the tests for organic or inorganic forms of iron. When it is exposed to the action of hydrochloric acid (0·2 per cent) or of gastric juice, no iron chloride is formed, and the substance is chemically unchanged. To this power of resisting chemical change must be ascribed, in all probability, the fact that ovoferrin causes no disturbance of digestion or increased tendency to constipation. Virgil Coblentz, Professor of Chemistry at the New York College of Pharmacy, reports upon its composition as follows :—

"I find 8 per cent of iron (calculated as metallic iron) present in the state of organic combination. This organic combined iron is present neither in the form of peptone, albumose, nor nuclein combination. Judging from all its reactions, that is, failure to precipitate with silver nitrate, a negative reaction with Macallum's test (the most delicate known), unchangeability toward hydrochloric acid, with other tests, I place ovoferrin beyond doubt as a representative of a new class of true metallic-organic derivatives, in which the iron is held in the molecule in organic combination."

References.—[1]*Brit. Med. Jour.* April 9, 1904 ; [2]*Pract.* Aug. 1904 ; [3]*Med. Press,* Oct. 12, 1904 ; [4]*Ibid,* July 6, 1904.

ANÆMIA (Pernicious). *Alfred H. Carter, M.D., F.R.C.P.*
J. G. Emanuel, M.D., M.R.C.P.

Gulland[1] points out that few hæmatologists now support Hunter's view that pernicious anæmia is a septic disease, starting from a streptococcic glossitis, due to drain poisoning. The disease probably may result from many causes, or at any rate predisposing causes. All that can really be said is that it is due to a poison of some kind, which in many cases is absorbed from the alimentary canal, producing three sets of symptoms—those connected with the blood, with the alimentary tract, and with the nervous system. There is no necessary relation between

them. There are three fairly well defined clinical types: acute, sub-acute, and chronic. The acute soon die, in their first attack. The sub-acute cases may recover from an early attack, remain comparatively well for a varying time, and die in a subsequent relapse; while the chronic cases may go on for an indefinite time, recovering up to a certain point, though seldom as vigorous as before, and liable to occasional slight relapses. It is not possible to predict the type of any given case. In general terms, however, the more marked the blood changes, the worse the case is likely to be. Hæmorrhagic cases, again, generally do very badly; and coma (apart from intercurrent conditions) is a very unfavourable sign. The occasional association of insanity with pernicious anæmia should not be overlooked, in cases of an especially chronic type.

Stains made by the Blood in Pernicious Anæmia.—Tallquist[2] states that, when a drop of blood spreads out on a piece of absorbent paper, and is surrounded by a ring of watery aspect, it indicates a very marked anæmic condition—a loss of at least half of the normal number of red blood corpuscles—and this phenomenon leads one to think most often of pernicious anæmia. In chlorosis, even the palest, this phenomenon does not take place. He has also verified the importance of this experiment in the diagnosis of anæmias. He has also made further observations in a case of pernicious anæmia: The blood stain is more red at the periphery than in the centre; the watery line that surrounds it, very clear when it is fresh, is not less clear when the stain is dry, and persists a long time after the paper has been wet; this line has a slightly oily appearance; the colour of this watery line varies from a dull white to clear yellow, and shows the tint of the plasma, which is sometimes relatively deeply coloured in pernicious anæmia. On red litmus paper, the blood stain gives a reaction far more blue at the aqueous peripheral line.

Pernicious Anæmia following Parturition.—Elder and Matthew report two cases of this kind, in young women of twenty-nine and thirty-one years of age, both of an acute type, and quickly fatal. The frequency of severe anæmia after parturition is well known; but closer investigation by recent methods shows that almost all such cases are of the nature of secondary anæmia, with a favourable prognosis as a rule. It is very doubtful whether secondary anæmia, however severe, ever passes into the pernicious form. Although in both cases the teeth were in a bad state, it is difficult to account for the sudden onset of an acute type of the disease, as the result of such a cause. It seems therefore not unreasonable to assume that under exceptional conditions (not as yet understood) toxic products of a hæmolytic order may be thrown into the blood after parturition, which may either directly set up a pernicious anæmia or seriously aggravate any pre-existing tendency to the disease.

C. H. Bunting[3], in a paper on the etiology and pathogenesis of pernicious anæmia read before the Medical and Chirurgical Faculty of Maryland, quotes some interesting experiments showing the difference

between the reaction of the bone-marrow to different stimuli, experiments which throw light on the differences in the blood pictures seen in cases of severe secondary anæmias on the one hand, and pernicious anæmia on the other. The results differ according to whether the blood corpuscles in the peripheral vessels are merely destroyed or lost by hæmorrhage, or whether in addition the bone-marrow is acted upon by a circulating toxin. In the first set of experiments a rabbit was bled from the ear veins on a number of consecutive days. The results were: (1) A great diminution in the number of the red corpuscles per cubic millimetre; (2) The presence of a relatively few nucleated red cells of the normoblastic type, which rapidly disappeared when the bleeding was discontinued; and (3) Hyperplastic changes in the bone-marrow post mortem. When, however, ricin was injected into an animal the blood picture was quite different. Ricin is a substance derived from the castor-oil bean, which has not only a destructive action on the corpuscles in the peripheral circulation, but also a toxic action on the regenerating bone-marrow. The changes occurring with ricin injections were: (1) A greater diminution in the number of the red corpuscles; (2) The appearance of a large number of nucleated red corpuscles—the majority of these were normoblasts and naked red cell nuclei, but there were present also a large number of megaloblasts, and these were the more numerous the larger the dose of ricin that was injected intravenously; and (3) Toxic changes in the bone-marrow post mortem

The conclusions drawn from these experiments are :—

1. In small hæmorrhages the deficiency of red corpuscles is met by the marrow with mature red cells (the nonnucleated erythrocyte).

2. In large hæmorrhages the supply of mature red cells is exhausted, and a certain number of normoblasts are called out to supply the deficiency.

3. In cases of a circulating toxin (as in pernicious anæmia) there is not only destruction of the red cells in the peripheral circulation, but also of the red cells and their progenitors in the bone-marrow. In this emergency the bone-marrow responds with nucleated cells of normoblastic or megaloblastic type according to the extent of the destruction by the toxin. Firstly, normoblasts are used to supply the deficiency, but a continued action of the toxin reduces the regenerating power of the marrow and causes it to take on embryonic characters, with the result that there is a discharge of megaloblasts in the hasty effort to meet the needs of the circulation. This agrees with the clinical observation that cases of pernicious anæmia with few normoblasts and more megaloblasts in the circulation are of graver prognosis than those with a large number of normoblasts and fewer megaloblasts.

In pernicious anæmia the etiological factor is probably a toxin, which acts partly on the peripheral circulation, destroying the red cells (hæmolysis), and partly on the bone-marrow itself, interfering with the proper formation of new red cells (hæmogenesis). Hunter[4]

has shown that this toxin probably has its seat in the digestive tract, especially in the stomach, but to a less extent in the intestine and the mouth. He submits that the irregular occurrence of such symptoms as nausea, vomiting, and diarrhœa, is due to the manufacture of the toxin at this site. The infection of the digestive tract, according to the same author, is caused chiefly by oral sepsis in connection with neglected carious teeth. That there is always a *toxæmia* associated with pernicious anæmia is shown by the occurrence of such toxic symptoms as (1) Fever, irregular in type and variable in degree, and (2) Nervous disturbances, such as pains, numbness, and tingling in the arms and legs, ataxia, loss of the knee jerk, and sometimes actual peripheral palsies. Moreover, the punctiform hæmorrhages found in the pleuræ, the pericardium, the peritoneum, and the meninges after death, and the retinal hæmorrhages observable during life, as well as the sclerosis of the anterior lateral and posterior columns of the spinal cord, which have been described as occurring in pernicious anæmia, all point to the conclusion that the disease is of the nature of a toxæmia, for these are the changes associated with toxæmias from other well-known causes.

That *hæmolysis* is a conspicuous feature of pernicious anæmia is shown by the waxy lemon tint of the skin, the urobilinuria with or without high-coloured urine, the deeply bile-stained fæces, and the relative richness of the red corpuscles in hæmoglobin—a condition never found in any other form of anæmia. The post-mortem evidence of the hæmolysis is to be sought in the enormous amount of iron that is found in the liver and the kidneys. That in pernicious anæmia faulty blood formation (*hæmogenesis*) also plays an important part is indicated by the oligocythæmia, the poikilocytosis, the presence in the blood of microcytes and occasional nucleated red corpuscles. The increase in the red marrow at the expense of the yellow marrow, as seen at post-mortem examinations of cases of pernicious anæmia, is further evidence in the same direction.

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ANÆMIA (Splenic). *Alfred H. Carter, M.D.*

Much discussion has taken place during the past year upon this condition. It is pretty generally regarded as a clinical entity, but there is not as yet sufficient evidence to establish it as a distinct pathological entity. Rolleston[1] enumerated the clinical characters as follows : (1) Splenic enlargement, which cannot be correlated with any known cause ; (2) Absence of enlargement of the lymphatic glands ; (3) Anæmia of a type midway between secondary anæmia and chlorosis ; (4) Leucopenia, or, at most, no increase in amount of white blood cells ; (5) An extremely prolonged course of many years ; and (6) A tendency to periodic hæmorrhages, especially from the gastro-intestinal tract In many cases there is a terminal stage with cirrhosis of the liver, jaundice, and ascites (Banti's disease). All

positive work towards determining the pathogeny of the condition has been critical rather than constructive ; but there is a growing belief that it may ultimately be shown to depend on the absorption of some toxin from the alimentary tract.

In addition to the discussion introduced by Rolleston, cases and papers on the subject have been published by O'Malley[2], Sandford and Dolley[3], Levy[4], Mitchell Stevens[5], Gordon and Scott[6], and Sedgwick[7].

In a paper upon the relationship of " splenic anæmia of infancy " to other forms of blood diseases occurring in infancy and childhood, Batty Shaw[8] is driven to the conclusion that no sharp line of demarcation can be drawn between any of the groups which have been dignified by special names, whether tested by symptoms, by anatomical changes in organs or blood, or by the results of treatment.

References.—[1]*Brit. Med. Jour.* Sep. 12, 1903 ; [2]*Amer. Jour. Med. Sci.* 1905 ; [3]*Ibid,* May, 1905 ; [4]*Ibid* ; [5]*Brit. Med. Jour.* Oct. 8, 1904 ; [6]*Lancet,* Sep. 12, 1903 ; [7]*Ibid,* Sep. 19, 1903 ; [8]*Ibid,* Dec. 8, 1904.

ANÆSTHESIA.

Jos. Blumfeld, M.D.

Chloroform.—So long as chloroform remains at once the most convenient and the most dangerous of anæsthetics, interest cannot fail in every fresh point of knowledge concerning its exact action. The physiologist continues to demonstrate by experiment its action upon cardiac muscle[1], and to contend that fatal effects are merely a question of dosage. The clinician is convinced that in man, at any rate, the matter is not so simple, and that death may occur during light anæsthesia and the inhalation of a not too strong vapour. The reader is referred for details to the discussion on chloroform at the Royal Medico-Chirurgical Society, in November, 1904[2], when many leading anæsthetists, as well as surgeons and physiologists, expressed their views. Attention was also directed to the matter at the British Medical Association's Oxford meeting[3], where in the section of physiology the Vernon Harcourt inhaler in particular was discussed. At present, although in addition to this inhaler there are those of Regnier, Dubois, and Levy, all of which efficiently regulate the percentage of chloroform inhaled, yet it cannot be said that, unless we except the Junker inhaler, there is one regulator applicable in all cases and, therefore, likely to be of use to the practitioner. He is probably better off relying upon the Skinner's mask and drop bottle, if only he will bear in mind the uniform presentation of a really weak vapour ; and in this his confidence should be greatly increased by the work done by Waller[4], and particularly by the investigation upon the strength of vapour existing under a Skinner's mask. *Provided the mask be not allowed to touch the face* it is difficult to offer for inhalation a vapour of chloroform and air with percentage higher than the safe limit of between 1 and 2 per cent of chloroform.

Delayed Chloroform Poisoning.—The important and highly interesting subject of the so-called " delayed poisoning " by chloroform has been much discussed by Continental and American observers. It was

brought prominently before the notice of the profession in this country by a remarkable case related by Leonard Guthrie some years ago, and supplemented during the past year by a paper read by him before the Society for the Study of Disease in Children. Guthrie's facts have been supported by Stiles and McDonald. The pathology of the occurrence cannot yet be regarded as at all clear. Guthrie supposes a pre-existing condition of fatty liver, the possession of which renders its subjects peculiarly prone to fatal poisoning after chloroform inhalation. The presence of fatty degeneration *after* prolonged chloroform inhalation is adequately proved, but the exact position of fatty change in the vicious course of events still requires elucidation. Guthrie's recent paper[5] on Aciduria, as the cause of deaths following the administration of chloroform and ether, should be read in connection with this subject.

Chloroform preceded by Atropine and Morphine.—On the Continent this combination of drugs is very widely used. There is no doubt that preliminary use of **Morphine** lessens the amount of chloroform required for anæsthesia. On the other hand it increases the ease with which respiratory failure is induced, which, together with the chance of individual idiosyncrasy to opium, probably renders the routine use of this method inadvisable[6, 7]. A similar use of **Hedonal** before chloroform has been tried in a small number of cases, apparently with success[8].

Nitrous Oxide.—Interest has been directed to meteorological influence upon the effects of inhalation of this gas. The contention of Bellamy Gardner that with high barometric reading a longer and quieter anæsthesia is more general than when the mercury is low[9], is to some extent corroborated by an article of Harry Hilliard's[10]; this author maintains that atmospheric effects are more pronounced when oxygen or air was employed with laughing gas, than when this agent is employed alone.

Ether.—W. Murrell[11] considers that probably one case in fifteen hundred administrations of ether exhibits some form or other of bronchial complication. The trouble may arise within a few hours, or not for some days after. It may be mentioned that other authorities exempt the anæsthetic from any blame in cases where trouble begins later than the fourth day. Murrell refers to hypersecretion of bronchial fluid, and mentions a case in which a man having recovered from immediate effects of operation, suffered twenty-six hours later from bronchial hypersecretion, which was fatal in less than an hour. Very little ether is stated to have been used in this case, the operation being mostly performed under chloroform. The nature and length of duration of the operation are not given. The importance of properly sterilizing face-pieces, and of protecting patients from getting chilled, are insisted upon; and the fact is recalled that the body temperature, always more or less reduced during ether inhalation, may fall as much as four degrees. Murrell remarks that chest complications occur sometimes, though more rarely, when not ether but chloroform is the anæsthetic used.

Kausch[12] regards ether as the special anæsthetic for diabetic subjects, chloroform being far more likely to cause intense acetonuria. The quantity of the anæsthetic and the duration of its inhalation should be diminished to the greatest extent possible. The early morning should always be chosen for the time of operation, so that the longest period of physiological abstinence be not unduly extended. Every diabetic patient should be put before operation upon the sodium treatment, and if coma be threatened or developed this treatment is to be energetically carried out, not only by mouth and per rectum, but also by subcutaneous and intravenous injections.

Cunningham and Mabey[13] report forty-one cases of rectal administration of ether, and claim that their method entails the use of very little ether, no excitement, no bronchial secretion, and a quick recovery.

Blood Changes produced by Ether in man and the lower animals.—J. M. Anders and L. W. Boston[14] assert that their investigations bear directly upon the choice of anæsthetics in particular cases. The effects of the commonly used anæsthetics upon the heart, kidneys, and lungs have received attention; but few records are to be found dealing with the influence of these drugs upon the blood itself. Persons, otherwise healthy, undergoing slight operations, and rabbits, were the subjects of investigation. The result of experiments showed that the fall in hæmoglobin produced during anæsthesia reaches its lowest level about twenty-four hours after the termination of the anæsthetic state; one-half of this fall takes place during the first hour after anæsthesia, the other one-half during the succeeding twenty-three hours. Blood regeneration goes on rapidly upon the arrest of the anæsthetic condition. Hæmoglobin is restored more slowly than erythrocytes; hence the cells are inadequately supplied with hæmoglobin for the time. At the end of twenty-four hours the colour index begins to rise rapidly, and it reaches the normal level after the lapse of about seventy-two hours. A few myelocytes may still be present. Briefly, inhalation of ether produces hæmolysis, followed by rapid regeneration of cells, with an increase of red corpuscles. The deduction is made that if a prolonged anæsthesia is required there should be present a register of not less than 50 per cent of hæmoglobin. Pathological blood suffers far greater destruction than that of a healthy person. As regards the white corpuscles, it was found that ether generally produces a brief leucocytosis, the number quickly returning to the normal after return of consciousness.

Effects of Ether upon the Urine.—Churton Goodwin makes some observations upon this point[15] which bear out the view that while albumin is more commonly to be found in the urine after ether inhalation than is the case with chloroform, yet any damage caused to the kidney is more likely to be transitory in the case of ether, but chronic with chloroform. The author mentions cases of suppression of urine following the use of ether in cases of Bright's disease. The general trend of evidence points to the rule that though, generally speaking, ether is less dangerous than chloroform so far as the renal functions

are concerned, yet when there is already existing serious kidney disease, chloroform is more suitable than ether if an anæsthetic has to be administered Casts are often found after the use of either drug. The article quotes fairly copious statistics, and also makes some reference to the appearance of sugar in the urine after anæsthesia.

W. H. Thompson[16], in a note on renal activity during anæsthesia finds two opposite effects caused by both ether and chloroform. In some cases, that is to say, there was increase, in others depression of the quantity of urine secreted. It appears that early in the administration there is increase, but with prolonged anæsthesia always marked diminution of the urine.

Ethyl-Chloride and Somnoform.—The past year has witnessed the record of much experience with these anæsthetics, and the invention of a number of appliances for their administration. With regard to the latter it becomes increasingly evident that the simplest form of apparatus rendering strict air-limitation possible is the most desirable. The ordinary small "bag" of a Clover's inhaler, fitted with a tap and

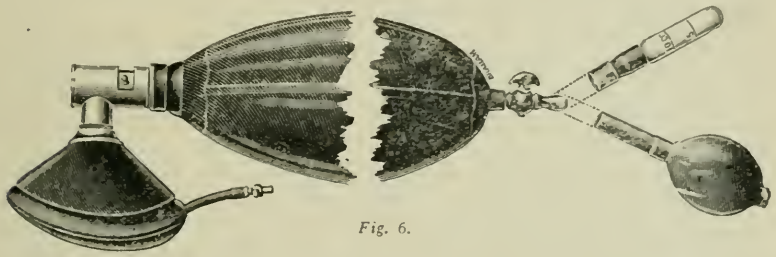


Fig. 6.

nozzle for the introduction of ethyl-chloride, and fitted straight into a face-piece serves excellently. A slightly more elaborate form of the same (*Fig.* 6) is pictured[17] in Hewitt's careful contribution to the clinical study of these volatile anæsthetics. This author pronounces definitely against the use of somnoform, and his opinion is borne out by the increasing record of fatalities with this mixture. As regards ethyl-chloride, its great portability, rapidity of action, and comparative safety, render it invaluable in hospital and in country practice. Where nitrous oxide, however, is available, there are comparatively few cases where, in skilled hands, it will not be preferred. Short throat operations upon young children appear to form the special field for the use of ethyl-chloride. It must not be overlooked, however, that unpleasant and, at times, serious after-effects are not infrequent, even in this class of case, unless the dose of ethyl-chloride used is carefully regulated. Hewitt's articles give cases in detail, and should be consulted[18]. A. Fleming[19] states the dose for children under six years to be 1 cc., a quantity which a couple of years ago would probably have been deemed ridiculously inadequate, but which experience shows to be quite capable of fully anæsthetizing infants for a short period, if the administration is rightly managed.

Ethyl-Chloride as a Preliminary to Ether and Chloroform.—Apart from its use as an anæsthetic for short operations, ethyl-chloride is now widely employed as an introduction to ether. Its use before chloroform is not to be recommended, for it is practically impossible to pass with safety from ethyl-chloride unconsciousness to chloroform anæsthesia without an interval of partial recovery. With ether this is not so, and J. W. Dansey[20] and V. Pedersden[21] recommend this procedure. A good general account of the use of ethyl chloride alone is given by Harvey Hilliard[22], and the reader is also referred to a *résumé* of anæsthetic work by Blumfeld[23].

Use of Oxygen.—The value of oxygen in combination with various anæsthetics has, from time to time, been upheld. It is of course, largely used as a matter of routine in connection with nitrous oxide, but it is contended by J. T. Gurnthmez[24] that it should be more largely used as a regular practice with other anæsthetics too. The author claims that it halves the danger of chloroform. Probably practical inconvenience is the chief obstacle to the routine use of oxygen, and the consideration that with care atmospheric air can be employed to almost as good advantage.

Local Anæsthesia and Intraspinal Injections.—Although in this country the method of intraspinal injection of cocaine does not meet with favour the method continues to be used widely in some hands abroad. Good articles on the matter are contributed by A. S. Gabb and V. J. Greer[25]. **Stovaine** has recently been used by Sonnenburg for spinal njection in place of cocaine[26]. The combination of **Cocaine and Adrenalin** for local anæsthesia has been further experimented with and is warmly recommended[27]. In the same periodical a short paragraph will be found dealing with the state that Hofmann calls "Früh narcosis." It is really an analgesia induced by minimal doses of anæsthetic after prelim nary **Morphia Injection.**

ANÆSTHESIA (Local). *Priestley Leech, M.D., F.R.C.S.*

Local Anæsthesia by Scopolamine.—Dirk[27] has been testing the action of scopolamine-morphine mixture for general anæsthesia. He prefers to employ separate solutions, using a 1 per cent solution of scopolamine and a 2 per cent solution of morphine. Two hours before operation he injects $\frac{1}{2}$ gram of the former and $\frac{3}{4}$ gram of the latter, and one hour before he gives $\frac{1}{2}$ gram of each solution, so that the patient receives 1 cgram of scopolamine and $2\frac{1}{2}$ cgrams of morphine. At times he gives a third injection, bringing the total quantities of the two drugs to $1\frac{1}{2}$ cgrams and 3 cgrams respectively. He does not aim at complete anæsthesia, but leaves a little for chloroform or ether to do. He reports the results of 260 anæsthesias since January, 1904. In 188 cases the operations were abdominal operations. In 29 instances the scopolamine alone sufficed for anæsthesia. Out of the 260 cases 3 died. The advantages are: (1) The psychical gain, especially seen in nervous patients; (2) The imperceptible going off, there is no feeling

of fear or choking; (3) It supplies a quiet, equable narcosis without salivation, without tracheal gurgling, without cough, retching, asphyxia, or collapse; (4) After the operation the patient lies asleep for a considerable time, and does not feel any pain in the wound; (5) For abdominal surgery a great gain is attained by the absence of vomiting; (6) It is possible to put patients safely asleep, when chloroform or ether would in all probability be dangerous to life.

In the discussion on Dirk's paper, I. Israel said he had lost 1 out of 332 patients by this method of anæsthesia, and Rotter also spoke highly of the method.

Ferrier and Desjardins[28] think this method presents a minimum of danger and a maximum of advantages for the patient. He prefers Merck's scopolamine, as it is pure. It alters very rapidly when exposed to air and to light, and it is better to use it freshly prepared. It is used in subcutaneous injection given by an ordinary Pravaz syringe, and most surgeons recommend the addition of morphia. They have used the method of Prof. Block, who employs the following solution: Bromhydrate of scopolamine 0·0012 gram, chlorhydrate of morphine 0·012 gram, distilled water 1 cc. A first injection is given four hours before operation, a second two hours, and a third an hour before operation. They have used a mgram and a cgram of morphia, to 1 cc. of distilled water, and have obtained a sufficiently deep anæsthesia in 26 out of 100 cases. Another advantage is, that chloroform may be used in addition; a single injection of 1 mgram of the latter is made two hours before the operation, and less chloroform is needed. If an anæsthetic is needed before the end of an operation commenced under scopolamine, chloroform must be given, and not ether. After the commencement of the operation the patient often moves the limbs, but, when restrained, the operation, in many cases, can be continued: if not, chloroform must be given, and often a few whiffs will be sufficient. There is no sickness, and the patient awakes as after a natural sleep, and eats as usual next day.

The disadvantages are: its action is uncertain, in some it causes a perfect anæsthesia, in others one is obliged to give chloroform. Its vaso-dilator action is a drawback, which sometimes troubles the operator, and which needs a careful hæmostasis. Finally there is contraction of the abdominal wall, and this persists in spite of chloroform. The method should never be used in connection with ether.

A. E. Barker[29] says that in order to attain the best results, we must not only render the skin and fat analgesic (local analgesia), but also the nerves and muscles of the part (regional analgesia). His own experience leads him to the conclusion that for ordinary surgical work the following solution answers well:—

℞ Distilled water, 100 cc. = ℥3½ | Sodium chloride, 0·8 gram. = grs. 12
Beta-Eucaine, 0·2 gram. = grs. 3 | Adrenalin chloride sol. (1–1000) ♏x.

All this quantity of fluid can be used in an ordinary case, and is quite sufficient for most; he has injected twice as much when large

areas have to be dealt with, without ill effect. This solution is as nearly as possible isotonic with the blood; if not isotonic, such a solution might lead to pain on injection and also to necrosis of the tissues into which it was injected. The method of preparation is to put 3 grs. of β-eucaine and 12 grs. of pure sodium chloride into a Jena glass beaker or flask, and boil it with the water; then add 10 minims of adrenalin solution from the bottle. Any alkali spoils the adrenalin solution at once, hence the Jena glass. The ordinary Freienstein's needles are used, but for deep injections Barker has devised a needle which can be lengthened. With the addition of adrenalin, the analgesia lasts longer, even three or four hours; but it also comes on more slowly, and one must wait for thirty minutes after the injection before operating. Waiting has another advantage: it allows much of the œdema to subside. The injection must be made slowly, and all dragging on the parts should be avoided, lest structures be pulled upon which lie beyond the area of infiltration, and this is the crux of abdominal operations. If **Morphia** agree with the patient, a dose may be given subcutaneously to relieve the tedium of lying on the back.

J. L. Chiene[30] also advocates the use of eucaine and adrenalin.

REFERENCES.—[1]*Brit. Med. Jour.* July 23, 1904; [2]*Lancet*, Nov. 26, 1904, and Dec. 17, 1904; [3]*Brit. Med. Jour.* Sept. 24, 1904; [4]*Lancet*, July 2, 1904; [5]*Ibid*, Aug. 26, 1905; [6]*Presse Med.* May 3, 1905; [7]*Lancet*, June 3, 1905; [8]*Brit. Med. Jour.* March 4, 1905, *Deut. Med. Woch.* Dec. 8, 1904; [9]*Trans. Odont. Soc.* Feb. 1904; [10]*Brit., Dent. Jour.* July 1, 1905; [11]*Med. Press.* Jan. 4, 1905; [12]*Brit. Med. Jour.* July 27, 1904 *Cent. f. Chir.* No. 27; [13] *Boston Med. and Surg. Jour.* April 20, 1905; [14]*Ther. Gaz.* Nov. 1904; [15]*Ibid*, May, 1905; [16]*Brit. Med. Jour.* March 25, 1905; [17]*Lancet*, Nov. 19, 1904, et seq.; [18]*Bris. Med. Chir. Jour.* Sept. 1904; [19]*Aust. Med. Gaz.* June 20, 1904; [20]*New York Med. Jour.* Dec. 24, 1904; [21]*Pract.* Feb. 1905; [22]*Ibid*, Sept. 1904; [23]*Med. Rec.* Nov. 1904; [24]*Bris. Med. Chir. Jour.* Sept. 1904; [25]*Med. Press*, Mar. 24, 1905; [26]*Treatment*, Aug. 1904; [27]*Deut. Med. Woch.* Mar. 9. 1905; [28]*Presse Med.* Mar. 4, 1905; *Med. Chron.* Aug. 1905; [29]*Brit. Med. Jour.* Dec. 24, 1904; [30]*Scot. Med. and Surg. Jour.* Sept. 1905.

ANEURISM.

Priestley Leech, M.D., F.R.C.S.

Aneurism of the Aorta.—Hamilton A. Ballance[1] reports a case of sacculated aneurism of the arch of the aorta in a labourer forty-four years old. The aneurism had increased in size in spite of rest, diet, and medicinal treatment, and the pain was getting worse. The skin over the aneurism was rendered anæsthetic with eucaine, and a fine hollow needle which just permitted No. 9 silver wire to pass through it, and which was insulated on its outer surface by a coating of shellac, was introduced for a distance of three inches into the fourth right intercostal interspace, one inch from the border of the sternum. After the needle had penetrated one inch, blood spurted through it to a height of over one foot. Eight feet of silver wire were then passed slowly through the needle into the aneurismal sac. This wire had been previously wound round a towel rolled into the form of a cylinder two and a half inches in diameter, and the wire and towel had then been boiled. The wire was passed directly from the towel into the

hollow needle, with the idea that when the wire entered the sac it would resume the coiled form it had on the towel. The introduction of the wire took seven minutes, and during this period there was some irregularity in both the rhythm and force of the pulse at the wrist; a constant current was then passed through the wire for forty-five minutes, the projecting end being connected with the positive pole, and a large flat electrode applied to the thigh with the negative. At the termination the end of the wire was pushed within the needle. Four weeks later a diminution in the swelling and pulsation was manifested. He died ten months from the operation, and at the post mortem a sacculated aneurism growing from the first part of the aorta was found; it was four inches in diameter, and filled with decolorized clots in which the silver wire was coiled up in various directions. Loops of wire embedded in dark post-mortem clots passed along the arch of the aorta as far as the origin of the left common carotid artery and down to the bottom of the left ventricle. Ballance thinks the wire was too long, and 4 feet instead of 8 would have been sufficient, and that the method suggested by D'Arcy Power and Colt would have been very suitable for this case.

Boyer[2] has recently examined a case of aneurism of the aorta which was attributed to an accident, and for which compensation was claimed. The patient, a drayman, received a blow on the chest which knocked him backwards from a height of about four yards, to the ground. He lost consciousness and was taken to the hospital. Eight months later he returned to hospital with severe pain in the dorsal region and right breast. Radioscopy showed a large pulsating mass in the thorax. There was no history of syphilis nor of alcoholic excess. The peripheral arteries showed no signs of atheroma. The fact that a certain amount of heavy work was possible after the accident does not exclude the traumatic causation, as an aorta with torn coats is known to dilate slowly.

Arterio-venous Aneurisms.—Bickham[3], of New York, reports a case of arterio-venous aneurism in the groin of a young negro, caused by a pistol shot. The external iliac artery was tied, and a week later the tumour had disappeared. He suggests the use of **Matas' Method** in these aneurisms. If the arterio-venous aneurism were of the varicose aneurism type, he would be inclined to open the sac and close both openings by interrupted catgut sutures, and then obliterate the sac as in Matas' method. If it were of the aneurismal-varix type, and the conditions were favourable, a longitudinal incision through the enlarged and varicose vein opposite the opening in the artery: close the opening in the artery in the usual Matas' way, and then close the opening in the vein by a continuous lateral suture.

The illustrations will explain the *modus operandi*. *Fig.* 7 shows the application of the method to an arterio-venous aneurism of the varicose-aneurism type, of the left common femoral artery and vein. The opening of the femoral artery into the common sac is shown on the right, with interrupted Lembert gut sutures in position ready to be

tied. The opening of the femoral vein is seen on the left, with similar sutures in position. On the left of the sac sutures are in the act of being placed, which, when tied, will approximate the roof of the sac, including skin and intervening tissues (not here shown) to the floor of sac. Similar sutures will approximate the roof and floor of sac upon the right. *Fig.* 8 shows a similar aneurism treated by excision of the

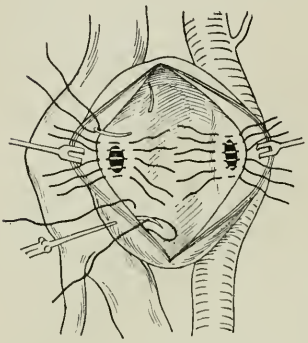


Fig. 7.

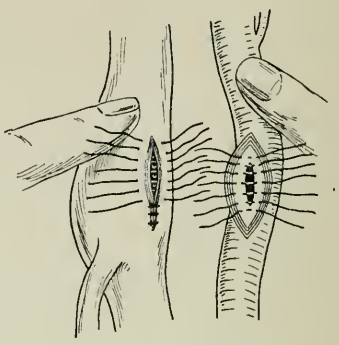


Fig. 8.

sac, followed by suturing of the openings in the vessels. On the right a small elliptical piece of the sac is shown connected with the arterial opening, with the first tier of interrupted Lembert sutures ready to be tied. Upon the left a similar elliptical piece of sac has been left connected with the venous opening. The first row of sutures has been tied, and a second tier of ordinary sutures through all the coats

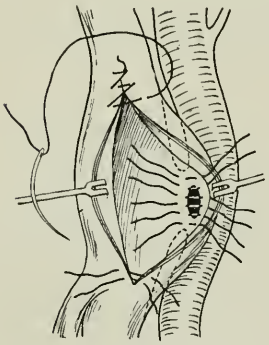


Fig. 9.

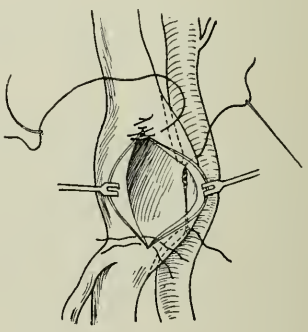


Fig. 10.

is being applied, burying in the first tier. *Fig.* 9 shows the treatment of the aneurismal-varix type of these aneurisms. The opening of the femoral artery into the varicosed vein is shown, with interrupted Lembert sutures in position. The longitudinal incision in the vein for approaching the arterio-venous opening (here made somewhat unnecessarily long) is shown being closed by two methods of suturing above

and below. *Fig.* 10, the same as *Fig.* 9, shows a continuous Lembert gut suture, which having been passed through the outer coats of the thickened vein at the angle of junction of vein and artery, and knotted, is passed on between the coats of the vein until its varicosed cavity is entered, near one end of, and immediately above the first tier of interrupted sutures; and is then made to bury-in this first tier and itself in continuous Lembert fashion, and emerging at the opposite angle of junction of vein and artery, is tied in the same manner as at its entrance (suture not yet tightened throughout). *Fig.* 11 shows a similar case treated by severance of vessels from each other, followed by suturing of their openings. On the right, interrupted sutures are shown passing through the outer coats of the artery, ready to be tied; on the left, a continuous Lembert suture through the outer coats is shown closing the venous opening.

Carotid Aneurism.—Mendes[4] says that the method of choice in aneurism of the carotid artery is extirpation of the sac. He reports two successful cases thus treated, and reference is made to five cases reported by other surgeons in which the same treatment was successfully carried out. He says that it is a method more likely to lead to a radical cure than ligature of the common carotid, and although more difficult should be preferred. It is difficult to see why less serious results should follow extirpation of the sac than ligature of the common carotid.

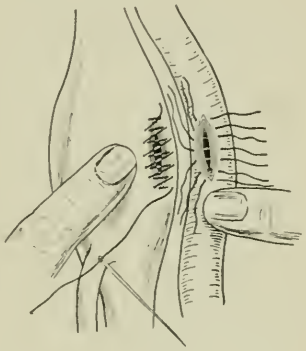


Fig. 11.

The difficulties of extirpation of the sac, especially accidental rupture and hæmorrhage, may be obviated by placing a loose ligature on the proximal portion of the affected carotid before commencing the extirpation. Turner[5], of Philadelphia, reports a case in which the right common carotid was ligated for inoperable sarcoma with temporary improvement, but the hæmorrhages from the nose and pains in the head began again, and the left common carotid was then tied; next morning he had passed into a condition of coma; the muscles of the back were rigid, the hands twitched, and the breathing was stertorous. He died later in the day. The artery was successfully tied under local anæsthesia. The common carotid was tied on the left side because no external carotid could be found, the main trunk not dividing until it seemed to divide into several branches under the jaw. This case illustrates the danger of tying both common carotids.

Hannecart and Labarre[6] report another case of arterio-venous aneurism following a cranial basal fracture, but no operation was done.

Innominate Aneurism.—Dunn[7] reports a case of aneurism of the innominate artery which was treated by the simultaneous ligature of the right carotid and subclavian arteries; the common carotid

being tied above the omohyoid, and the subclavian in its third part. Fifty-one days after operation the sac had consolidated and felt firm. Sheen[8], of Cardiff, successfully ligatured the innominate artery for aneurism of the subclavian. The patient, forty-six years old, formerly a soldier, had an aneurism of the second and third parts of the subclavian; the symptoms had appeared six months previously; the innominate and right carotid arteries were tied; pulsation ceased in the aneurism, but was found to have returned to some extent the following day. An unsuccessful attempt was made to tie the innominate again. Two weeks later the subclavian was tied in its second part close up to the aneurism. Recovery took place with consolidation of the aneurism, and the man remained well when last seen eight and a half months after operation. The mortality of this operation is nothing like what it was in the pre-antiseptic days. There are reported 43 cases in which an attempt has been made to ligature the innominate; out of this number ligature was accomplished in 36, and of these 28 died and 8 recovered, a mortality of 78 per cent. Omitting all cases previous to 1871, i.e., prior to the antiseptic period, there are 16 cases with 9 deaths, a mortality of 56·25 per cent. Of the last 6 cases operated on 5 recovered. The main causes of death have been sepsis and hæmorrhage, sepsis and cerebral lesions. Sheen says asepsis is essential for this operation; the skin should be prepared two days before operation, or even longer if the skin is rough and wrinkled the anæsthetist should be screened off by a sterile linen sheet after the plan recommended by Kocher in cases of goitre; the sterile cloths should be stitched to the skin close round the wound, to prevent their displacement, and no drainage tube should be used. Asepsis being obtained, at the present time a fatal result would appear to be most likely from cerebral complications; and to avoid these, Sheen suggests that the operation should be performed in two stages, the carotid being tied a fortnight before the innominate. The central incision is the best for exposing the artery; silk is the best material for ligating the vessel, and if drawn sufficiently tight to divide to some extent the inner coats, there is less probability of a return in the pulsation of the aneurism. Two ligatures may be employed, and the "stay" knot of Edmunds and Ballance, three strands being used, or a single ligature tied in a surgical knot. The best method is that of two separate ligatures, the first turn of the proximal ligature being held tight so as to keep back the blood while the distal ligature is completely tied. "Valsalvan" methods of treatment immediately prior to operation are inadvisable.

Popliteal Aneurism.—Jessner[9] reports a case of this form of aneurism successfully treated by **Matas' Operation.** Gibbon[10] also reports one treated in the same way; the aneurism was cured, but the wound suppurated. In this method infection of the wound does not appear to interfere with the cure of the aneurism. Faure[11] relates a case of extirpation of a popliteal aneurism which was followed in a few hours by gangrene of the leg. He used Esmarch's bandage, and would hesitate to do so again, although he cannot attribute the gangrene to this cause.

Subclavian Aneurism.—Murphy, of Chicago[12], gives notes of a case of cervical rib with symptoms resembling subclavian aneurism.

Highet[13] reports a case of successful ligature of the left subclavian artery in its third part for hæmorrhage from a septic sloughing wound of the shoulder.

Treatment of Aneurisms by **Gelatin.**—Gley[14], from experiments he has conducted, says there is some ground for believing that the coagulating property of gelatin is due to the very small quantity of calcium chloride that it contains. He purposes experimenting further by injecting sodium chloride and also decalcified gelatin. M. Le Dentu[15] reports a case of traumatic aneurism of the popliteal artery in which extirpation of the sac would have been dangerous, and where treatment by rest and flexion of the leg had proved ineffectual; injection of gelatin led to a cure by consolidation of the sac.

Lancereaux[16] says that tetanic accidents and others which have been noted as following the injection of gelatin, have been produced either by the employment of gelatin solutions of poor quality or by the use of solutions insufficiently sterilized.

References.—[1]*Lancet*, Oct. 1, 1904; [2]*Lyon Méd.* July 10, 1904; [3]*Ann. Surg.* May, 1904; [4]*Rev. de Chir.* No. 4, 1905; [5]*Ann. Surg.* Nov. 1904; [6]*Jour. de Chir. et Ann. de la Soc. Belge de Chir.* Feb. 1905; [7]*Lancet*, June 3, 1905; [8]*Ann. Surg.* July, 1905; [9]*Ibid*, Jan. 1905; [10]*Ibid*, July, 1905, p. 724; [11]*Bull. et Mém. de La Soc. de Chir. de Paris*, No. 11, 1905; [12]*Ann. Surg.* 1905; [13]*Lancet*, Mar. 11, 1905; [14]*Bull. Méd.* July 13, 1904; [15]*Bull. et Mém. de la Soc. de Chir. de Paris*, No. 10, 1905; [16]*Rev. Fr. de Méd. et de Chir.* Oct. 17, 1904.

ANGINA PECTORIS.

Alfred H. Carter, M.D.

It seems not generally appreciated that anginal attacks are not infrequently followed by important cardiac changes. Kernig[1] classifies them in the following groups. In the first a mild febrile state develops in conjunction with demonstrable increase in the area of cardiac percussion—dullness as compared with the size of the heart before the attack. In the absence of other cause of fever, the elevation of temperature may be attributed to softening or inflammation of the myocardium. The second group comprises cases in which, with or without fever, obvious changes in the heart referable to dilatation of one or another cavity make their appearance under the eye of the observer. In the third group are included cases in which acute pericarditis develops in the sequence of an attack of angina pectoris. Although this condition has received but little clinical consideration, it has long been known anatomically. Its occurrence is attributed to the invasion of the pericardium by bacteria from the area of myocardial softening, or infarction or abnormal perviousness of the smaller vessels. Mural endocarditis, secondary to areas of myomalacia in the sequence of attacks of angina pectoris, has likewise been reported. A fourth group of cases may be distinguished in which, in the absence of evidence of changes in the heart demonstrable by physical means, symptoms of functional derangement make their

appearance, such as diminution in the amount of urine, and the development of œdema.

In view of the foregoing facts, not only should patients suffering from angina pectoris be kept under observation for some time after an attack of any considerable degree of severity, but they should also be enjoined to secure complete physical rest in bed for days, and even for weeks, in order to avert a fatal termination.

REFERENCE.—[1]*Med. Rec.* Mar. 14, 1905.

ANKLE JOINT (Amputation at). *Priestley Leech, M.D., F.R.C.S.*

Moschcowitz[1], of New York, has performed amputation at the ankle joint by the following method. The ankle is disarticulated as in a Syme's amputation. A wedge-shaped piece is sawn out of the end of the fibula, the saw entering the fibu'a at the level of the cartilage covering the tibia (see *Fig.* 12); a small osteoperiosteal flap is formed from the inner surface of the malleolus: this flap is directed inwards, and the rest of the internal malleolus removed; the flap is then turned over the raw surface left, and sewn by catgut sutures. (*Fig* 13.)

Fig. 12.

Fig. 13.

F. T. Murphy[2] investigated 500 cases of amputation of the lower extremity, particularly in reference to the after usefulness of the limb. He addressed enquiries to artificial limb makers and to patients. They agreed that after foot amputations, and those of Syme and Pirogoff, much difficulty attended the provision of a satisfactory apparatus. In amputations above the ankle, long tibial stumps were not desirable; stumps between six and eight inches long are the most serviceable. Amputations through the knee joints are inferior to those just above the condyles. Suture of periosteum over the bone and approximation of muscle and fascia are desirable.

REFERENCES.—[1]*Ann. Surg.* May, 1904; [2]*Bull. iii. Surg. Harvard Med. School*; *Brit. Med. Jour.* Dec. 17, 1904.

ANTHRAX. *Priestley Leech, M.D., F.R.C.S.*

Several cases of this disease are reported where **Sclavo's Serum** has been employed. Attention was drawn in the 1894 *Annual* (p. 149) to the favourable reports by Italian surgeons on the use of this serum.

C. B. Lockwood and Andrewes[1] report the case of a man, a worker in horsehair; the pustule was near the outer canthus of the right eye, and only a single dose of the serum was given, and recovery ensued with very little loss of substance.

Bowlby and Andrewes[2] treated another case in a horsehair dresser, where the lesion was on the forehead. A single injection of 40 cc. also cured this case. In both the bacillus anthracis was found. Mitchell[3]

also reports a case cured by the serum, but at the same meeting Dr. Scholefield read notes of a case on anthrax of the wrist, where the serum was used without effect and the man died.

Legge[4] also read a paper on the treatment of anthrax by Sclavo's serum. The dose of serum recommended in ordinary cases was 30 to 40 cc. subdivided into three or four injections subcutaneously into different parts of the abdomen, and followed in twenty-four hours, if there had been no improvement, by further injections of from 20 to 30 cc. In every grave case he recommended endovenous injection, preferably into one of the superficial veins on the back of the hand, of 10 cc. followed in an hour or two, where there was no improvement, by another similar dose. Lionel Stretton[5] successfully treated a case in a girl seventeen years old.

Domenico Lassi[6] injects 5 minims of pure **Carbolic Acid** in three parts of the carbuncle. This can be repeated during the same day. Keor[7] excised a pustule on the forearm with success.

T. M. Legge[8], in his Milroy Lectures for 1905, gives all the most recent information about anthrax and Sclavo's serum. He gives details of 67 cases of external anthrax treated by the serum. (The serum can be obtained from Messrs. Martindale, and Messrs. Allen & Hanbury.)

In the *Lancet*[9] there is an article on the means taken at Nürnberg to disinfect the bristles used in brush making, and the mortality has much diminished, though the number of cases has not materially lessened.

References.—[1]*Brit. Med. Jour.* Jan. 7, 1905; [2]*Ibid*, Feb. 11, 1905; [3]*Ibid*, May 6, 1905; [4]*Lancet*, July 9, 1904; [5]*Ibid*, May 27, 1905; [6]*Gaz. deg. Osped.* Dec. 11, 1904; [7]*Lancet*, Dec. 10, 1904; [8]*Ibid*, Mar. 18, *et seq.* 1905; [9]*Ibid.*

ANTRUM OF HIGHMORE. (*See also* Nasal Accessory Sinuses, *and* Nose, Diseases of.) *P. Watson Williams, M.D.*

Brown Kelly[1] has introduced some methods of value in the systematic inspection of the antrum, because, as he points out, the methods of diagnosing disease of the antrum at present in vogue give information only as to the fluid contents of the cavity, but none as to the condition of the lining membrane, if we except transillumination which occasionally indicates this to be more or less thickened. The diagnosis is therefore based solely on the discharge, and our management of antral suppuration may be compared to the treatment of otorrhœa without examination of the ear. In dealing with the antrum, questions frequently arise which make the inspection of its lining membrane desirable. Thus there may be doubt as to whether pus is forming in the antrum or merely collecting there, whether the suppuration is limited to a small area or involves the whole lining membrane, and whether the changes in the lining membrane are slight and will probably yield to mild measures, or considerable and demand a radical operation. Further, how else than by inspection are we to gain a true knowledge of antral affections? Is it not something of a reproach that although cysts and polypi are present not infrequently, as proved by post-

mortem examinations, we have no signs or symptoms by which to diagnose them during life? Lastly, are our remedial measures to remain as limited as heretofore? If we fail to check a discharge by simple means—e.g., syringing, or insufflating powders—is our sole alternative method to be the radical operation, entailing general anæsthesia and confinement indoors for at least a week?

The method of opening the antrum is as follows. The gingivo-labial fold beneath the canine fossa is painted with 20 per cent solution of cocaine. From four to six cubic millimetres of 10 per cent. solution of cocaine are injected at two or three points in the anæsthetised area into the soft tissues over the canine fossa. After three or four minutes have elapsed the zygomatic-alveolar ridge is noted, and commencing just in front of it, an incision is carried forward along the gingivo-labial fold for about from $1\frac{1}{2}$ to 2 centimetres. The facial wall of the superior maxilla is now exposed by pushing aside the investing soft tissues with a raspatory. The sharp trocar (*Fig.* 14) is applied to the bony surface at a point about five millimetres in front of the zygomatic-alveolar ridge, and about the same distance above the incision in the mucous membrane. Having bored a passage large enough to admit the end of the blunt-pointed trocar (*Fig.* 15), the latter is used to make the full-sized opening. By completing the operation with a blunt-pointed instrument the danger of injuring the opposite wall is averted. The trocars should be directed backwards, upwards, and slightly inwards. The operation is simple, often painless, although occasionally somewhat painful when boring through the bone, can be quickly accomplished, and has in Kelly's experience but one drawback, namely, the necessity for the submucous injection of cocaine. Eucaine was tried in 20 per cent solution, but sensation was not satisfactorily abolished.

Fig. 14.—Sharp Trocar.

Fig. 15.—Blunt-pointed Trocar.

The landmark referred to, the zygomatic-alveolar ridge, descends from the malar process to the alveolar border above the first molar. He recommends that the incision should terminate posteriorly just in front of this ridge, for when carried further back a small arterial twig is cut; if this escapes, the bleeding is unimportant, and no special measures for its control are necessary. In exposing the canine fossa one is not likely to pass so high as the infra-orbital foramen; still it should be kept in mind. The advantages of using large trocars to make an opening into the antrum are that they secure a cleaner wound with greater ease, rapidity, and precision, and with less discomfort to the patient than does the ordinary method of chiselling.

To obtain a good view of the antrum a speculum is necessary. A large-sized ear speculum or Zaufal's naso-pharyngeal speculum cut

down serves the purpose. An instrument such as that depicted (*Fig.* 16) is, however, most satisfactory. It resembles a large, elongated aural speculum of circular calibre with bevelled end. The last provision facilitates its introduction, and when in use gives a more extensive field of view and allows of the freer manipulation of instruments in the cavity. An extra-long speculum (*Fig.* 17) is useful at times, e.g., when œdema of the lining membrane more or less occludes the lumen, the opposing surfaces may be pushed apart by the instrument and the deeper regions inspected. To introduce the speculum, the left forefinger is used to raise the lip and so cause the wound to gape. The speculum is then passed in gently. If any difficulty is encountered it is best overcome by looking through the speculum, mopping away the blood if necessary, and then pushing aside the soft tissues with a probe or avoiding the bony ridge of the opening by altering the direction of the instrument. By inclining the instrument in various directions and turning the bevelled part towards the region to be examined, the lining membrane of the greater part of the cavity may be minutely inspected. The parts of which a view is unobtainable are the anterior wall and those portions of the other walls immediately adjacent, especially the roof. The ostium maxillare is usually not seen owing to the inner wall being viewed in perspective, but its position is easily determined by a right-angled probe under control of the eye. If the artificial opening were bored further outwards, e.g., over the zygomatic-alveolar ridge, instead of in the canine fossa, the ostium would be visible and a better view of the inner wall obtainable, but for general purposes the route already recommended is probably best, and it has the further advantages that here the bone is thinnest and the speculum is most easily introduced.

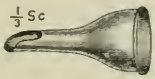


Fig. 16.—Speculum.

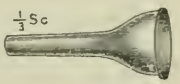


Fig. 17.—Longer ditto.

Immediately after the operation, having syringed the antrum if necessary, a look may be taken at its lining membrane. The detailed examination is best postponed, however, till the following day, the wound meantime being loosely packed with iodoform gauze. At the patient's second visit the gauze is removed, the antrum is syringed, and the lining membrane is thoroughly examined by means of a strong, bright light reflected through the speculum.

Antra in which the Lining Membrane was normal or but slightly changed.—In several of these cases suppuration was apparently going on in the antrum, for pus was being regularly washed out by syringing through an opening made in the alveolus. On inspecting the cavity, however, the lining membrane seemed normal, or but slightly thickened on the floor. In order to exclude the antrum as the seat of the suppuration it was packed with gauze, and as the discharge of pus from the nose was undiminished clear evidence was thus afforded that the antrum was merely a reservoir for pus draining into it from the frontal sinus or ethmoidal cells. This method is therefore capable of

yielding valuable information as to the source of pus issuing from the anterior part of the middle meatus.

General Thickening of the Antral Lining Membrane.—The majority of the patients whose antra were inspected suffered from chronic antral suppuration, and in most of these cases the appearances presented by the diseased lining membrane varied but little and consisted in a general thickening. The surface of the membrane was pale and smooth; ulceration was observed in no instance. The degree of thickening was not uniform; without exception it was greatest on the floor and least in the upper part of the cavity, a fact which emphasizes the irritant action of pus lying in the antrum.

In cases in which the suppuration might possibly have been of dental origin the floor of the antrum was carefully examined, but without ever discovering the mouth of a sinus or other indication to support this view.

The antral suppuration in several of the cases presenting the above appearance was associated with nasal polypi or frontal sinus suppuration, or both, and in one instance with fœtid atrophic rhinitis. In these cases of chronic suppuration in the antrum attempts were made to check the discharge, either by modifying the diseased mucous membrane or by destroying it and encouraging the growth of a new lining membrane. Various medicaments were tried. Antiseptic powders were insufflated, boric acid, iodoform, iodol, airol, aristol, and europhen being in turn applied, but all without appreciable benefit. Packing the cavity with boric acid increased the discharge; with iodoform it was somewhat diminished. Liquid applications of an astringent or caustic nature, e.g., chloride of zinc, silver nitrate, or carbolic acid, were also repeatedly employed, but proved inefficient. Of all medicaments tried, chromic acid fused on the end of a probe was found to be the most useful. It had the additional advantage of being easily applied. Experience showed that it was inadvisable to cauterize more than half of the antral surface at a sitting.

Usually on the second day following the cauterization the surface of the mucous membrane that had been treated presented a dirty grey appearance, and was found to consist of necrosed tissue which could be wiped or picked away more or less completely. Perfect healing required from two to three weeks, and the membrane was then smooth, grey, and much thinner than before. Curetting was also tried with a general anæsthetic. This to be effective must secure the removal of the entire diseased lining membrane. It is not possible to operate thus without severe pain, even if only a small area which previously had been thoroughly painted with a 20 per cent solution of cocaine is treated at a time.

Œdema and Thickening of the Antral Lining Membrane.—In a few cases œdema was the most striking change presented by the antral lining membrane.

Polypi and Polypoid Degeneration of the Antral Lining Membrane.—Polypi were found in one case and polypoid degeneration in three cases.

Cysts of the Antral Lining Membrane.—Cysts were found in the antrum in one case. The patient was a young woman who had mucopurulent rhinitis, probably of a strumous nature, with a tendency to recurrent polypoid proliferations of the middle turbinates.

REFERENCE.—[1]*Lancet*, Sept. 17, 1904.

ANUS. (*See also* PRURITUS ANI, *and* RECTUM.)

P. Lockhart Mummery, F.R.C.S.

Congenital Malformations of the Anus and Rectum.—An important investigation into the origin of these malformations has been carried out by Wood-Jones[1]. He shows that the rectum is developed as a pouching of the hind gut, called by him the post-allantoic gut. The rectum is therefore developed from three embryonic portions: (1) The hind gut; (2) The post-allantoic gut; and (3) The proctodæum. He has determined the limitations of these embryonic portions in the adult. The junction of the hind gut and post-allantoic gut is marked in the adult rectum by the reflection of the peritoneum from its anterior surface, and the junction of the post-allantoic gut and proctodæum by the position of the anal sinuses. This investigation has an important bearing upon treatment, especially in those cases of imperforate rectum where the gut is not in contact with the proctodeal depression. It has generally been supposed that the gut in such cases may be anywhere, but this is not so. The gut should be looked for and found at the normal position of the peritoneal reflection from the rectum, that is in the male at the upper level of the prostate, and in the female of the vagina. A careful search should therefore be made in these situations for the patent portion of the gut, rather than in the hollow of the sacrum as is usually advised. The same author also points out that in these cases of imperforate rectum there is very constantly an opening between the imperforate rectum and the urinary passages, this opening being in the male into the prostatic urethra, and in the female into the vagina just below the cervix. It is only in exceptional cases that this opening is large enough to allow urine or flatus to pass, but if looked for by careful dissection in the post-mortem room it can generally be found. In some cases, as we know, this opening is a wide one, and we then get the curious condition of the rectum ending in the bladder or urethra.

Fissure in Ano.—In cases of anal fissure, which are unsuitable for operative treatment, or in which it is refused, Katzenstein[2] advises the following ointment:—

R	Extract of belladonna grs. $7\frac{1}{2}$ Cocaine hydrochloride gr. $\frac{1}{2^{\frac{1}{0}}}$	Ammonium sulphichthyolate ad grs. 90

This is warmed and applied once or twice daily.

Mummery[3] recommends that in cases of fissure, when the fissure is of recent origin, the treatment should be tried of painting the fissure with a little pure **Ichthyol** on the end of a probe, and with the aid of a suitable fenestrated speculum. This is repeated every few days for

five or six applications. The pain generally disappears after the first application, and healing is often complete in a week or ten days.

Tumour of the Anus.—A case is reported by Ramognini and Sacerdate [4] of a man age fifty, with a large cauliflower-like growth in the anal region ; it measured 7 cm. by 10 cm. and was freely movable. It was thought to be a papilloma, but after being removed was discovered to be tuberculous in character.

References.—[1]*Brit. Med. Jour.* Dec. 17, 1904 ; [2]*New York Med. Jour.* June 11, 1904 ; [3]*Clin. Jour.* March 8, 1905 ; [4]*Rif. Med.* Nov. 2, 1904.

APHONIA. *P. Watson Williams, M.D.*

Voice-strain and Loss of Voice in Singers.—The pathological changes in the vocal cords, which must be held to account for the loss or deterioration of voice following persistent misuse or strain, are unrecognizable by simple laryngoscopic examination with the stroboscope (a sort of zoetrope invented by Musehold). Jobson Horne points out that it is easy to see that increased vascularity of the cords is the natural concomitant of increased function, and this hyperæmia when exaggerated becomes the essential factor in producing pathological changes leading to loss of voice. As the result of persistent strain following the unnatural use of the chest register, excessive vascularity leads to proliferation of the capillaries and vascular elements, and hyperplasia of the connective tissue and of the submucous glandular structure ensues. The formation of new connective tissue elements is progressive and interlacing among this glandular structure, and compress and gradually obliterate it. Hence the supply of mucus is diminished, and the muscle fibres likewise become degenerated in isolated areas from similar processes, while the epithelium undergoes hyperplastic and later metaplastic changes, with the development of warty excrescences (diffuse or localized pachydermia laryngis). The treatment indicated by Jobson Horne's study of the pathogenesis, is **Rest**—absolute rest. As he says, local remedies and applications can only aggravate and irritate the processes it is sought to arrest ; while, as regards prevention, the indication is to ascertain and then train and develop the capabilities of any individual organ, above all, letting the voice be natural.

APOPLEXY. *Purves Stewart, M.D.*

Prophylaxis.—The surest test of sound pathology is the prediction of disease. And if a disease can be predicted, the clinician should attempt its prevention. Clifford Allbutt[1], in a characteristically thoughtful address, attacks the problem of the prevention of apoplexy. Clinically we have long ago given up the catastrophic notion of disease ; we have learned that its catastrophes are sudden only to him who is blind to their approach. The name of apoplexy—*sideratio*—signifies a stroke "as if from the stars." So it appeared to the ancients, and even yet it so appears to the inexpert public. But when the pathologist examines the apoplectic brain, he finds some underlying cause for the fatal hæmorrhage : sometimes granular kidneys with their

associated high-tension circulation, in any case damaged arteries, and usually an abnormal heart; so that the event is surprising only to the unwarned. The brain itself is only secondarily affected. As Allbutt puts it, the outbreak in the brain is no fault of this organ, but wholly its misfortune. Apoplexy, then, is a secondary result of a disordered circulatory mechanism. The cardiac hypertrophy is not the primary factor. Changes in the heart are secondary or compensatory. The primary disease lies in the arteries. These have become sclerosed and atheromatous, and at last have burst from the accumulation of obscure stresses. Even without Bright's disease, arterial spasm may be present. Allbutt distinguishes two classes of cases, one with the "large, lax, and leathery" artery, the other with the "wiry" artery. Both of these are liable to rupture and to produce cerebral hæmorrhage.

In the prevention of cerebral hæmorrhage, we have to prevent a persistent rise of mean arterial tension. It is probable that arterio-sclerosis is not the cause but the consequence of increasing arterial tension. Allbutt therefore urges that, as a matter of routine, every adult of the age of forty and upwards should have his **Blood-pressure Measured** by the best instruments available. This examination should be repeated every five years, say till the age of sixty, when, if there be no great increase, the danger of apoplexy may be disregarded. The wiry artery patients are, on the whole, less amenable to treatment than the leathery artery class.

TREATMENT.—When the mean blood-pressure is found to be too high, we should bear in mind that nearly all men, and not a few women, take far more food than they need, and that sedentary persons need much less food than they habitually consume. If, then, we find a persistent rise of mean arterial pressure in a patient of middle or advanced years, we should counsel him to revise his mode of life, the main points being regulation of exercise, abstinence from alcohol, and a great reduction in the amount of food. Also the regimen and the waters of such **Spas** as Harrogate, Carlsbad, and Marienbad, are of great value. **Mercury** and **Saline Aperients** also benefit such patients.

If the patient has already had a slight apoplectic attack, the above-named measures are still more essential. But it is better to step in before the apoplexy has occurred, and, by careful observation and regulation of the blood-pressure, to avert an accident which may otherwise be inevitable.

REFERENCE.—[1]*Bris. Med. Chir. Jour.* Mar. 1905.

APPENDICITIS. *A. W. Mayo Robson, D.Sc., F.R.C.S.*

An important discussion was opened by Sir Frederick Treves at the Royal Medical and Chirurgical Society, on February 28th, 1905, and at two subsequent meetings. His paper dealt with (1) The degree of imperfect relief or of imperfect recovery after operation; (2) The complications which may attend operation.

Sir Frederick said that he had notes of 45 patients in whom, from their point of view, the operation had been a failure from one

cause or another. The relative frequency of these cases of failure may be gathered from the London Hospital statistics collected by Mr. Hugh Lett, from which it appears that among 231 patients in whom the appendix was removed, 11 complained that they had had attacks like those they had before. Of the 45 imperfect results referred to by Sir Frederick Treves, the appendix had been imperfectly removed in 2 cases, ovarian trouble co-existed in 9, persisting or relapsing colitis was present in 8, persisting local pain existed in 7, neurasthenia or hypochondriasis occurred in 5, continued attacks due to gall-stones in 3, continued attacks due to colic in 2, continued attacks due to movable kidney in 2, continued attacks due to stone in kidney in 1, continued attacks due to an unexplained cause in 1, tender mass in the right iliac fossa in 5. Of the imperfect results, after the evacuation of abscess, are mentioned persistent sinuses ; recurring abscess, recurring attacks like appendicitis ; fæcal fistulæ and inflammatory deposits in the right iliac fossa.

Of the complications which attended operations for appendicitis, Mr. Lett's tables showed those that had occurred in 1,000 operations—fæcal fistula 49, thrombosis of the femoral vein 12, intestinal obstruction 10, bronchopneumonia 17, pleurisy with effusion 14, pleurisy without effusion 2, empyema 7, acute bronchitis 4, pulmonary embolism 1, parotitis, non-suppurative 4, pylephlebitis 4, residual abscess 11, secondary abscess 12.

The result of the discussion clearly showed the importance of care in diagnosis to avoid the mistakes occurring under the head of imperfect relief ; and with regard to the complications which may attend operation it seemed clear to some of those present that if operations were undertaken at the earliest possible moment, the numerous complications dependent on septic absorption would be prevented, and that fæcal fistula and sinuses would not be likely to occur if the appendix was removed even in the acute cases.

In a recent paper Mr. Lockwood[1] has drawn attention to the *relationship between colitis and appendicitis.* He quotes several cases where colitis has been caused by appendicitis, and where removal of the appendix has cured the condition. In certain cases, colitis may be the prominent feature, and so much in the forefront that the appendicitis may be obscured and overlooked. In some of Lockwood's cases the pain was always on the left side, and the region of the left colon was decidedly tender on pressure. Tenderness over the appendix was elicited only when the colon had been cleared of its gaseous and fæcal contents. The operation of appendicectomy was curative. We can fully bear out these observations by personal experience of several similar cases in which the colitis was apparently kept up by the septic condition of the appendix, and cured by its removal

Discussing the *Differential Diagnosis of Appendicitis and Perforating Ulcer of the Duodenum*, Tuffier[2] points out that error in diagnosis is of frequent occurrence, and in many cases cannot be avoided. In discussing the value of such indications of duodenal perforation as the

seat and intensity of the abdominal pain and a history of dyspeptic troubles, he states that much in this respect depends on the period of the attack in which the patient first comes under surgical observation. If there be no doubt as to the existence of the three conditions of sudden and intense pain occurring in the epigastric region of a dyspeptic subject, perforation of a duodenal ulcer may be confidently diagnosed, but in many instances this association of symptoms cannot be clearly determined. In 15 out of 23 cases of duodenal perforation the pain could not be precisely localized, and in 6 cases only was there any history of dyspepsia. In cases in which it is difficult to make a diagnosis, the surgeon should first operate on the right iliac fossa, and then, if he finds the cæcum and appendix quite healthy and at the same time observes a profuse discharge of fœtid fluid from the pelvis, he should perform laparotomy in the middle line and search for an intestinal perforation. The first incision would not be superfluous, as it is advisable to drain both iliac fossæ. [Personally I prefer in a doubtful case of this kind to make my incision through the outer border of the right rectus, so that when the abdomen is opened it is easy to extend the incision upwards in case the duodenum is at fault, or downwards in case of perforating appendicitis, and this without dividing any muscle or having to make a second opening.]

Causation of Appendicitis.—Campbell Williams[3] points out that the increase in the use of boracic acid as a food-preservative may possibly account for the frequency of appendicitis nowadays. This drug acts as an irritant of the gastro-intestinal tract, producing pain in the epigastrium, and gas in the stomach and intestines, together with colic and diarrhœa. These conditions he thinks may predispose to appendicitis from invasion of the intestinal wall by the bacillus coli communis.

Methods of Operation.—Discussing the various methods for the removal of the vermiform appendix, Kelly[4] deduces that there are three principal objects striven for by the various modifications of the operation, and describes an operation which apparently meets all the conditions practically. The first object is to remove the appendix without contaminating the surrounding peritoneum. The second is to treat the mucosa in such a manner as to prevent any contamination while closing the opening in the bowel made by the amputation. The third is to dispose of the stump so as to avoid any risk of infection after the closure.

To meet these specified indications Kelly has devised a pair of crushing forceps with longitudinal grooves on the crushing surface and a bevel above. When this forceps is applied, it requires a force of from twenty-five to forty pounds to lock the blades on the appendix, and a force of about sixty pounds to release them. The appendix is exposed, and the meso-appendix is tied off. A circular suture is run round the base of the appendix, about 1 cm. distant, but not drawn up. The appendix is then grasped at its base with the forceps and crushed, while just beyond the forceps the appendix is seized with ordinary pressure forceps to prevent the escape of its contents. Paquelin's cautery is now used to amputate the appendix between the two forceps. The

crushing forceps is now carefully isolated by tucking dry gauze under each blade so as to lift the end of the forceps up on a cone away from all contact with the cæcum. The red-hot point of the cautery is then kept travelling up and down the groove in the crushing forceps, so as to burn off all the stump and at the same time to heat the forceps so thoroughly that the narrow ribbon of crushed appendix becomes converted into a translucent gristle-like substance in which the lumen of the appendix is completely destroyed. The final step is the tightening of the purse-string suture and the inversion of the cooked base, after which the serosa is carefully united over the whole with another row of fine sutures.

Seelig[5] maintains that the most rational method of dealing with the appendix consists in simple ligation, followed by cauterization. The disinfected stump is dropped back into the peritoneal cavity. Other methods, such as the methods of invagination of the stump, are all open to serious criticism. He considers that the method of inverting the appendix stump into the cæcal wall is dangerous, for the inevitable exudate that forms as bottled up in a cavity under conditions which are particularly favourable to abscess formation. For similar reasons he regards the "cuff" method as unsuitable In complete inversion of the stump into the lumen of the cæcum, there is the danger of infection of the field of operation from the cæcum, and there is also the risk of secondary hæmorrhage.

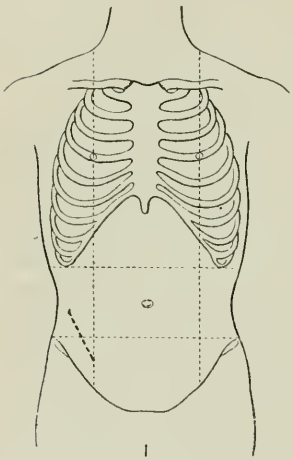


Fig. 18.—To show line of incision.

Isaacs[6] points out that in certain cases of appendicitis, difficulty is encountered in removing the appendix by reason of extensive adhesions. These adhesions may be so dense that to tear them would involve danger of tearing the adherent gut or of starting a hæmorrhage difficult to control. In several such cases Isaacs has incised the serous coat of the appendix and "shelled out" the inner layers. The white, glistening surface of the middle layer is the guide to the depth of the incision. The serous coat peels off very easily, and the core can be easily separated and raised from its bed without fear of hæmorrhage. Enucleation may only be required in removing an adherent portion of the appendix, the remainder being free and able to be excised by the ordinary methods.

In the *Brit. Med. Jour.* for June 21st, 1905, I showed by a series of diagrams the method of removing the appendix that I have employed for some years in the "interval" cases, with universal success, a method which I can confidently recommend. The diagrams (*Figs.* 18–24) show the various stages of the operation. In the same Journal, July 1st,

1905, is a report of two cases of perforated appendix with general peritonitis, in which the same method was successfully employed for treating the stump.

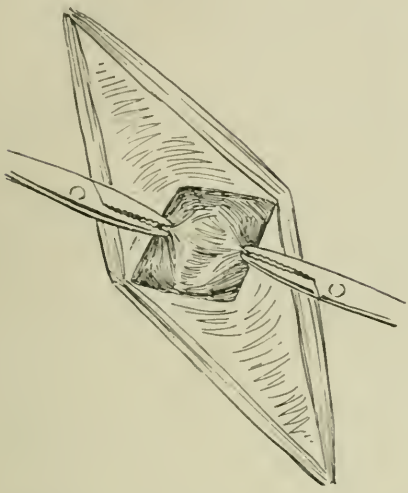


Fig. 19.—Peritoneum exposed in floor of space obtained by splitting the muscles.

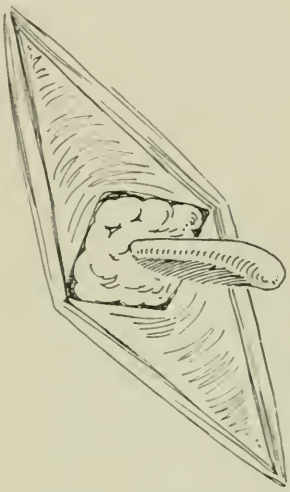


Fig. 20.—Cæcum and appendix projecting through lozenge-shaped space obtained by splitting the muscles.

Fig. 21.—Forceps applied to root of appendix.

Fig. 22.—Crushed portion of root of appendix with ligature applied close to cæcum.

Fig. 23.—Purse-string suture applied but not yet tightened.

Fig. 24.—Dimple seen after tightening the purse-string suture.

Foreign Bodies in the Appendix.—Potherat[7] has recently published an interesting case with the object of pointing out the risk of applying metallic sutures, such as Michel's "agrafes," to the wall of the intestine. Such bodies, after they have penetrated the coats of the intestine, are usually in the course of time discharged with the fæces, but, as Potherat's case shows, they may be retained, and set up serious mischief. A woman, who three years previously had been operated on for the

removal of a large ovarian cyst, came under the author's notice presenting symptoms of acute appendicitis. A large suppurating cavity was laid open, and the appendix, which was found surrounded by fœtid pus, was removed. The organ when examined showed a large perforation on its internal surface, and in its canal, close to the opening, two metal sutures (agrafes) were found. The patient made a good recovery.

REFERENCES.—[1]*Brit. Med. Jour.* Mar. 4, 1905; [2]*Bull. et Mém. de la Soc. de Chir. de Paris,* Nov. 11, 1905; [3]*Clin. Jour.* May 17, 1905; [4]*Amer. Med.* Dec. 31, 1904; [5]*Ann Surg.* Nov. 1904; [6]*Med. Rec.* April 15, 1905; [7]*Bull. et Mém. de la Soc. de Chir. de Paris.*

ARTERIES (Wounds of). *Priestley Leech, M.D., F.R.C.S.*

Brewer[1] reports some experiments he made on animals as to the closure of wounds in the larger arteries. He had cut the external iliac with a Hagedorn's needle while performing an operation for the radical cure of hernia; the wound, a quarter of an inch long, was sutured, but the pulsation tore the stitches out again and he was obliged to tie the artery. He thought if some support could have been given to the artery, the stitches would have held; in these experiments he tried rolling some plaster round the artery over the suturing. Some of the experiments resulted in a patent vessel, but in others, where a stronger plaster was used, clots were formed in the vessel, which he supposed were due to the pressure of the plaster on the vessel.

Dr. Stewart[2] reports a case of suture of the femoral artery. A traumatic aneurism had been formed; the sac was opened and the opening in the artery was sutured, and the patient recovered without a bad symptom.

REFERENCES.—[1]*Ann. Surg.* Dec. 1904; [2]*Ibid,* July, 1905.

ARTERIOSCLEROSIS. *Alfred H. Carter, M.D.*

Several papers on this subject have appeared during the past year which, while they indicate the importance and interest of the condition, have not resulted in any material addition to or modification of our knowledge of it. The value of many communications is further discounted by lack of precision as to the form of degeneration under consideration.

Thayer and Brush[1] examined the records of 3,894 consecutive hospital cases, with the object of getting information on the relation of palpable radial arteries to probable causes. They find that (1) The percentage of palpable arteries is materially higher among those individuals in whom there is a history of heavy physical labour and of the use of alcoholic stimulants. This percentage is appreciably higher in the cases giving a history of heavy work. (2) The percentage of palpable radial arteries is higher among cases presenting a history of severe infectious diseases, than among those in which this history is absent. The proportion is, however, far below that in the case of work or alcohol. (3) Rheumatism appears to be the acute infection

after which the percentage of palpable vessels is highest, and next to rheumatism, typhoid fever.

They think that there can be no doubt that the main etiological factor in the development of the hyperplastic thickening of the intima, which constitutes so important an element of arteriosclerosis, is over-strain of the vascular walls, continued or intermittent high tension, whatever its ultimate cause may be. Heavy physical labour is assuredly one of the most important of these causes. The rôle of the acute infections may be rather in the production of those focal degenerations with secondary regenerative changes, which constitute the other important element in arteriosclerosis.

Intermittent Claudication.—This peculiar manifestation of arteriosclerosis, according to Patek[2], is more frequent than generally supposed, and is apt to be confounded with sciatica, neuralgia, and rheumatism. The occurrence of pain on walking, its absence when at rest, and the absence of pulsation in one or more of the distal arteries of the leg, will usually lead to a correct diagnosis. Total occlusion of the vessels, as occasionally found in intermittent claudication, may lead to gangrene of an extremity. Early recognition is essential, in order, by appropriate treatment, to prevent this complication. Bodily rest, with warmth and moisture, is a most important element of treatment. The use of alcohol and tobacco must be interdicted, and all excesses and abuses avoided. Hydrotherapy, massage, and electricity appear to be serviceable in some cases. The iodides, vasodilators, and heart-tonics are indicated. In the main, however, reliance must be placed upon a therapeusis of general character, not medicinal. When walking is resumed, the utmost caution must be observed to avoid undue fatigue.

Michels and Parkes Weber[3] report a third case of obliterative arteritis, leading to gangrene of the extremities, in an otherwise apparently healthy man, in the prime of life. The disease occurs almost exclusively in the male sex, and the lower extremities are chiefly affected. There was no history of syphilis, alcoholism, or premature senility. All three of their cases occurred in poor East End Jews in London. Prof. Israel has referred to an idiopathic gangrene of the lower extremities occurring in men between thirty and forty years of age, especially Russian Jews. It is probable that these belong to the same category. The pathology is quite obscure. Buch[4] draws a clinical picture which he considers distinctive of sclerosis of the vessels in the splanchnic area. The significance of this symptom-complex is an acquisition of the past few years, and is a valuable addition to our knowledge of the manifestations of arteriosclerosis in other regions of the body, the sclerosed coronary arteries, arch of the aorta, cerebral, renal, and femoral vessels, giving rise to definite and easily appreciated features. The essential mark of all the cases is abdominal pain of a paroxysmal nature. He recognizes two classes of cases according as they are associated with true angina or not.

References.—[1]*Jour. Amer. Med. Assoc.* Sept. 10, 1904; [2]*Med. Rec.* Feb. 18, 1905; [3]*Brit. Med. Jour.* April 8, 1905; [4]*St. Pet. Med. Wchnsch.* 1904, v. 29, No. 27.

ARTHRITIS (Rheumatoid). (*See* RHEUMATOID ARTHRITIS.)

ASTHMA. *Wilfred J. Hadley, M.D., F.R.C.S.*

Writers have still dwelt on the importance of the etiological factor in this disease.

In various papers the same pathological conditions are given, as formerly, as the cause of the dyspnœa, viz. : (*a*) A spasm of the muscle in the smaller tubes ; (*b*) An œdema of the mucous lining ; (*c*) A fluxional hyperæmia of the mucous lining ; (*d*) A spasm of all the muscles of respiration, including the diaphragm ; (*e*) A bronchiolitis with characteristic mucous deposit.

The writer thinks that cases differ materially, and while some are definitely due to spasm, there are others in which the condition is more like an " urticaria of the bronchial tubes," whilst the very common presence in the sputa of Curschmann's spirals goes to show that there is a definite exudation into the bronchioles.

TREATMENT.—The importance of the search for the cause was emphasized by one author last year, and reference is made to it again this year. **Iodide of Potash, Arsenic** and **Belladonna,** are still the most reliable remedies for lessening the underlying tendency to attack, and so reducing their frequency.

Campbell[1] recommends the intra-tracheal injection of a mixture of **Menthol, Glycerin,** and **Gelatin,** not only as a most efficacious remedy during the acute attack, but also as being frequently permanently curative. He injects large doses, as much as 30 grs. of menthol in 2 ozs. of glycerin, and continues the treatment daily for some weeks.

Adrenalin Chloride has been recommended as frequently of great service, either given by the mouth or subcutaneously. The reviewer would point out that the most important cases to get well are those in which, even between the attacks, the sufferers are never quite free from wheezing, and their lungs still show rhonchi and râles. These are the cases which, unrelieved, drift into early, and permanent, bronchitis and emphysema, with all *their* attendant results on the heart and other organs. It follows that diminution of frequency is an improvement ; it may be all that can be gained at the time ; but it is so important a gain, that treatment should not be abandoned. as is so frequently the case, when only partially successful, because it does not result in a complete removal of the attacks.

REFERENCE.—[1]*Liv. Med. Chir. Jour.,* Jan., 1904.

BERI-BERI. *J. W. W. Stephens, M.D.*

Hewlett[1] advocates the local use of **Strychnine** in the treatment of paresis in these cases ; $\frac{1}{50}$ grain of strychnine is injected into each thigh daily.

REFERENCE.—[1]*Brit. Med. Jour.,* p. 1288, 1905.

BLACKWATER FEVER. (*See* MALARIA.)

BLADDER (Diseases of). *E. Hurry Fenwick, F.R.C.S.*

Acute Ascending Paralysis (Landry's Paralysis) in cases of Chronic Cystitis —An important contribution to the sparse literature of this vexed and much discussed subject is made by T. J. Walker[1], of Peterborough, who records three cases of long-standing cystitis which terminated fatally by acute ascending paralysis of a "most malignant type."

Case 1 was a man æt. 40. When fifteen years old he fell astride a rail and injured his perineum. Ten years later he came under Walker's care for retention of urine and stricture of the urethra. The retention had come on gradually, the patient having gone about habitually with a distended bladder. He never completely lost the chronic cystitis, which did not inconvenience him greatly, and did not prevent his taking and working a baker's business. He seldom sought medical aid unless there was an acute exacerbation, or some indication of the stricture requiring dilatation. In April, 1877, being 40 years of age, such an exacerbation occurred, and on May 18th he felt numbness in the feet and some loss of power in the legs. Next morning there was paresis of the limbs up to the thighs. By the evening the paralysis had extended upwards to the arms and the thorax, and the breathing was already embarrassed. The symptoms rapidly progressed, and death took place eighteen hours after their onset. No post-mortem examination was made, but it seemed probable that some direct causal relation between the urinary disease and the rapidly fatal—almost fulminating—ascending paralysis must exist.

Case 2, a man æt. 62 was meatotomized by Walker for stricture of the meatus, which had induced symptoms of cystitis, distended bladder, and painful micturition. Nine years later, never having lost his cystitis in the interim, he had an acute exacerbation of his bladder troubles, accompanied by malaise and some fever. The symptoms were not urgent, and there was no difficulty in micturition; the catheter was not passed. Four days later, he complained of uncomfortable sensations and some muscular feebleness in the lower limbs. In a few hours he was distinctly paraplegic, and forty-eight hours after the first indication of paralysis he was dead. No necropsy was allowed.

Case 3, a man æt. 67, who had for many years suffered from chronic cystitis and prostatic disease requiring catheterization. He had been confined to his bed for some time. On the morning of March 13th, 1894, when the patient got out of bed, he appeared feeble and unsteady on his feet. He was catheterized as usual. When seen twelve hours later by Walker the movements of his hand and arm were impaired, and twelve hours after the onset of the symptoms indicating implication of the nerve centres, the paralysis had progressed upwards until the upper extremities were involved. He died eighteen hours after the first onset of the paralytic symptoms. No necropsy was made.

Each of these three cases of progressive ascending paralysis is distinguished by the sudden invasion of the attack, by its terribly rapid progress, and by the fact that it occurred as the fatal termination of a

chronic cystitis. Although rarely alluded to by writers on diseases of the urinary organs, "urinary paraplegia" has been recogni ed since Stanley, in 1883, directed attention to the malady, accounting for it in accordance with the dominant pathological theory of that date, as a form of reflex paralysis. Even fifty-three years before this, Troja (as quoted by Leyden[2]) stated that violent inflammation of the kidney may produce an irritation of the nerves of that organ, which may extend to the nerves of the spinal cord, giving rise to paralysis and loss of sensation in the lower limbs. Gull, in a paper published in Guy's Hospital Reports for 1861, attacked the wavering faith in the nervous reflex view of the pathology of urinary paraplegia, contending that it was due to an inflammation of the cord which escaped detection in fatal cases owing to the imperfection of the examinations made at that time (1861). In this paper he enumerates the characteristics of urinary paraplegia under fifteen heads, the second, third, and fourth of these being: (2) Usually only lower limbs paralysed; (3) No gradual extension of the paralysis upwards; and (4) Usually paralysis incomplete; from which it is clear that every character of "the symptom complex" (Farquhar Buzzard), which we call Landry's paralysis, is wanting in 'urinary paraplegia," as hitherto described.

Leyden[3], in a clinical lecture on the subject of reflex paralysis, goes fully into the history and pathology of urinary paraplegia, and concludes that in a considerable number of cases of paraplegia urinaria an anatomical affection of the cord has been proved in the form of a myelitis, which begins in a circumscribed lesion in the upper part of the lumbar enlargement. He assumes that the inflammation first passes to the nerves, and induces in them a progressive neuritis which, as has been proved by experiment, may lead to myelitis. He concludes that this may therefore be looked upon as the most natural and frequent mode of occurrence in paraplegia urinaria.

Beyond this stage, says Walker, the pathology of urinary paraplegia has not been advanced. He can find no record of bacteriological investigation in this malady. Affections of the bladder associated with, but secondary to, disease of the nervous system have not, he thinks, any bearing on the question under consideration, and he therefore passes briefly to the history of Landry's paralysis, by which is meant acute ascending paralysis such as that which proved fatal to his patients; a mortal malady which until now, as Farquhar Buzzard points out, is to us only a "symptom-complex," not a disease.

Landry[4], in his original paper, published ten cases of ascending paralysis showing a pernicious and malignant character, differing from other cases of general progressive paralysis characteristic of well-known morbid conditions in the essential point, that there was in these cases an absence of every appreciable nervous lesion. This, which he regarded as the essential characteristic, can no longer be so regarded, as since 1859, when Landry's paper was published, the microscope, at first unaided by the various hardening and staining processes, and

latterly with their most valuable help, has been brought into use for the examination of the nervous structures, and the number of fatal cases of acute ascending paralysis in which no pathological change can be found has been proved to be very small. In the great majority there are microscopical changes in the cord and in the meninges, such as could not be detected by the pathologists of 1859, and the opinion of the most recent investigators is that the symptoms are due to an acute intoxication of the nervous system caused by microbic toxins.

Farquhar Buzzard, after a careful consideration of the results of the bacteriological and microscopical examinations of these cases, concludes that the clinical manifestations of Landry's paralysis are the result of a local infection, a general pyæmia, or, lastly and most frequently, of an acute intoxication. Beyond this stage he has himself advanced the pathology of the disease by his discovery of an organism which he regards as specific and as the cause of the disease, although he is careful to say that he does not as yet claim to have in any way proved that this is the only microbe that can produce the fatal toxins. Assuming, then, that it has been proved by competent investigators that Landry's paralysis is an intoxication of the nervous centres due to infection by specific microbes, and that urinary paraplegia is the result of the spreading from the urinary organs to the lumbar portion of the cord of a specific inflammation, Walker thinks we have grounds to justify a probable explanation of the pathology of the cases to which he calls attention. In every infection three factors are necessary: (1) The presence of microbes having active infective powers; (2) A medium in which these microbes when conveyed to it can develop; and (3) The resistant power of the tissues must be weakened. He ventures to suggest as a provisional view that in his cases these factors existed. First, the specific microbes were to be found in the urinary organs, probably in the bladder; secondly, at a certain stage of the disease they were conveyed along the same course, almost certainly the nerves, by which inflammation spreads from the urinary organs in paraplegia urinaria to the cord, in which medium they developed rapidly, producing a virulent intoxication; and thirdly, the tissues were weakened by the long-standing cystitis.

Whether this view be accepted or not, whether it be confirmed or disproved by future investigation, the clinical facts remain the same: and although in not one of his cases did a correct diagnosis and prognosis prolong or save the life of the patient, he looks forward to the time when, the pathological association of this acute ascending paralysis and chronic urinary disease having been definitely established, remedial measures (probably organo-therapeutic) may be discovered which may stop the rapid course of the malady and avert its fatal termination. It is with this hope that he presses these observations on the notice of those members of the profession who can devote themselves to pathological investigation.

Cystitis in Early Life due to the Colon Bacillus.—G. Cecchi[5] gives an account of seven cases of cystitis in children, shown to be caused by the

invasion of the colon bacillus, and discusses the questions whether such cases can be diagnosed by the serum reaction and successfully treated by the injection of specific serum. In each of these cases a pure culture of the colon bacillus was obtained from the urine, and in some cases from the vulvar secretions and from the fæces. The seven cases are divided into five groups. The characters, both microscopical and cultural, of the bacilli, and the results of agglutination experiments, showed that each group of cases was caused by a separate variety of bacillus, agglutinated by the serum obtained from one or other of the patients in the same group, but not agglutinated by the (reasonably diluted) serum from patients in other groups. In one case the serum reaction —absent when the patient was admitted to hospital—was present five days later. Only one of these five strains of bacilli was agglutinated by Celli's serum, and that patient died before this fact could be utilized in the treatment. In each of the two groups containing two cases, the two cases were either both severe or both slight—an observation which seems to show that the gravity of the case depends on the virulence of the bacillus. From his observations, the author concludes that urinary infections due to the colon bacillus generate specific serums with the power of agglutinating the bacilli, but there is no single specific strain of colon bacilli always found in such cases, and therefore, in the present state of our knowledge, a negative serum diagnosis is not final, though a positive result from a properly conducted agglutination test is of great value. Before a case can reasonably be subjected to treatment by Celli's serum, two tests must be satisfied. In the first place, the bacterium to which the disease is ascribed must be cultivated and found to be agglutinated by the patient's own serum. In the second place, the cultivations must be agglutinated by Celli's serum. The author's observations seem to show that only a small minority of all cases will present these indications for specific treatment. It is noted that the discovery of the colon bacillus in the vulvar discharges suggests that the path of the infection may well be from the anus to the urethra, and not, as has usually been assumed, through the intestinal walls or by the blood vessels.

Postural Cystitis.—Sir William Bennett[6] alludes to the subject of what he terms "postural cystitis" thus: "The occurrence and persistence of cystitis is greatly influenced in females by the posture of the patient. In consequence of the flabby condition of the bladder, arising in females mainly from the general habit of long retention of urine, commonly rendered necessary by social requirements, it is practically impossible for a woman who has reached middle life to empty the bladder completely whilst lying on the back; hence residual urine, generally in large quantities, is almost always present in women confined to bed by illness. Decomposition, rendered more liable in women than in men by the shortness and often half patent condition of the urethra, occurs very readily, giving rise to all the ordinary symptoms of cystitis. Cystitis of this kind, which I have called posture cystitis, is only permanently curable by getting the patient up. In all these

cases, as soon as the patient can leave her bed an immediate improvement takes place, and recovery rapidly follows the simplest treatment—a good practical point to bear in mind, and one which may save you much waste of time and trouble, and the patient great discomfort, if you have a knowledge of it."

Early Diagnosis of Vesical Tuberculosis.—Guyon[7] declares that the diagnosis of vesical tuberculosis at an early period is before all to be made by cystoscopy.

Suprapubic Lithotomy.—Southam[8] records a mortality of 24 per cent from suprapubic lithotomy—a percentage which at first sight, says Southam, seems unusually high. It must be remembered, however, that the cases so treated were all unsuited for lithotrity, the latter operation being contra-indicated in each instance—with one exception—on account of the large size of the stone, associated either with enlargement of the prostate and an unhealthy state of the bladder and urine, or with a feeble condition of the patient, in consequence of which the shock of a prolonged crushing operation would not have been well borne. The fatal result in these cases was due in several instances, when the patients were advanced in years, to sudden heart failure, coming on at some interval after the operation, when all was apparently progressing favourably; in others, as proved by necropsy, it was the result of pre-existing secondary renal disease, death being preceded by suppression of urine and other evidences of uræmia. The one exception was a boy, aged eight years, upon whom he performed his first suprapubic operation in 1886. This date was very shortly after suprapubic lithotomy had been revived by Sir H. Thompson, and experience of the operation was as yet very limited. The bladder and urine being healthy, after removing the stone he sutured the opening in the bladder and then closed the external wound. All went on satisfactorily for some days, when the bladder began to leak; the urine being unable to escape externally, infiltrated the surrounding tissues, and the boy developed pelvic cellulitis, which proved fatal. Subsequent experience has taught us to leave the external wound open when the bladder is sutured, so that if any leaking should occur there may be an exit for the urine.

The mortality after suprapubic lithotomy is a high one. Thus Jacobson[9] mentions 14 cases of suprapubic lithotomy under his care, of which 4 were fatal, giving a mortality of 28 per cent. Barling[10] collected 72 cases of suprapubic lithotomy performed in London and provincial hospitals between 1888 and 1892, the patients all being under twenty years of age, and in 15 instances there was a fatal result, giving a mortality of 20 per cent. Freyer[11], since he has performed lithotomy only in such cases as are unsuitable for lithotrity, says lithotomy in the adult (21 cases, with 4 deaths) has been attended by a mortality of nearly 20 per cent.

Value of the X-rays in Vesical Stone.—It is a matter of some surprise to find that the X-rays are not used more in children suffering from hæmaturia or urinary distress. Children are so easily subjected to the

method, and their tissues are so easily penetrated, that it would seem we have a very valuable diagnostic agent in radiography. *Plate II* shows the pelvis of a boy aged six, who had suffered from incontinence of urine and was admitted into the London Hospital for this symptom mainly. He was radiographed in the routine, and four large stones were detected in his bladder. The stones were crushed and evacuated. The boy was up before the end of the week, and when last heard of was free from incontinence.

Fallacious shadows from intestinal contents must be borne in mind. In children the use of an aperient before radiography is imperative. No shadow should be taken seriously if the child has had bismuth mixture, for this coats the fæces, and the resultant shadow is round and well marked.

References.—[1]*Lancet*, Mar. 11, 1905; [2]*Germ. Clin. Lect. New Sydenham Soc.* vol. lxvi.; [3]*Op. cit.*; [4]*Gaz. Hebd. de Méd. et de Chir.* vol. vi. 1859; [5]*Il Morgagni*, Aug. 1904, *Brit. Med. Jour.* Nov. 5, 1904; [6]*Clin. Jour.* Oct. 14, 1903; [7]*Med. Rec.* May 7, 1904, *Jour. des Pract.* April 16, 1904; [8]*Brit. Med. Jour.* May 21, 1904; [9]*The Operations of Surgery*, 1902, ii. 406; [10]*Brit. Med. Jour.* 1894, vol. i. p. 959; [11]*Modern Treatment of Stone*, p. 59.

BLEPHARITIS. (*See* Eyelids.)

BLOOD (Examination of). (*See also* Anæmia Pernicious, *and* Leucæmia.) *Alfred H. Carter, M.D.*
J. G. Emanuel, M.D.

Now that "blood-counts" are so frequently made, there is a demand for a method which shall be as short and simple as possible. Turton[1] suggests the following plan. The two kinds of cells should be counted on different slides. Use the "white" Thoma-Zeiss pipette for leucocytes, with a dilution of 1 in 20; and the other pipette for red cells, with a dilution of 1 in 200. For dilution, use a 3 per cent solution of common salt, deeply stained with gentian violet. When counting leucocytes alone, the diluting fluid should contain 3 per cent of B.P. acetic acid. It is preferable to count by whole microscopic fields of known area, rather than by squares. By moving the draw-tube of the microscope up and down, it is quite easy to arrange a field of exactly $7\frac{1}{8}$ squares in diameter (Thoma-Zeiss scale), the cubic contents of which equal $\frac{1}{100}$ c.mm. This having been found, it is only necessary to make a mark on the draw-tube, and the arrangement can then be used at any time without further calculation beyond counting twenty fields, with a dilution of 1 in 20, and adding two cyphers to the number so obtained.

C. W. Cunnington[2] points out that the association of leucocytosis with suppuration is not so constant as often assumed. When pus toxins are being absorbed under pressure, there is a high leucocytosis; but when the walls of the abscess are thick and fibrous, or when the pus has free exit, there is little or none. He suggests that observations of the percentage of the coarsely granular eosinophile cells may be helpful in such cases. When present to the extent of 1 per cent or more, it is almost certain that there is no active suppuration. In cases

PLATE II.

Radiograph of a boy, six years old, with 4 Stones in the Bladder. Litholapaxy. Cure.

of abscess without leucocytosis, the eosinophilè is always diminished, and generally absent; but, on the other hand, this cell may be quite absent apart from suppuration.

Williams[3] discusses the alleged destruction of red blood cells in the spleen, in accordance with the theory of Kölliker. He regards it as a pure chimera, probably due to the fact that the spleen under examination had begun to decompose.

Hæmophilia.—Goodall[4], as the result of an enquiry into this morbid condition, concludes that: (1) Hereditary transmission is a striking feature in nearly every case; (2) Although hæmophilia is more common in males, it is not so infrequent in females as is generally stated: (3) A large proportion of the more recently recorded cases have been transmitted through the male line; (4) The condition is not due to any anatomical peculiarity of vessels or tissues demonstrable by present methods; (5) The essential pathology seems to consist in a greatly delayed coagulability of the blood, which progresses with progressing anæmia; (6) There is reason to believe that calcium chloride may be of service, but its use is likely to be limited in severe cases by irritability of the stomach, and its nauseous taste.

The use of Blood Cultures in Diagnosis.—Salinger and Walters[5] give an interesting description of three obscure cases in which the diagnosis was made by means of blood cultures. The description of their method of procedure is worthy of note, for the finding of specific organisms in the blood is rare, and yet the three cases gave a positive result upon the first trial. They all ended in recovery, and a pure culture was obtained in each instance. Jürgensen[6] suggests that an unsuccessful result in a blood-cultural examination is due principally to two conditions: first, that blood is not taken in sufficient quantity for examination; and secondly, that all the culture media should be employed in endeavouring to arrive at a conclusion. For a clinical description of the cases reference must be made to the original paper; here it must suffice to say that two of them closely resembled acute rheumatism in their clinical aspects (they did not however react to salicylates), and that the third suggested general miliary tuberculosis or typhoid fever. The organisms found in the three respectively were the pneumobacillus of Friedländer, the streptococcus lanceolatus or diplococcus of pneumonia, and Fränkel's pneumococcus.

The method of procedure was as follows: "Two cc. of blood were withdrawn from the central vein of the arm after properly preparing and disinfecting the member. The blood was placed in a flask containing 200 cc. of bouillon, and cultivated at 37° C. Spreads from this culture were examined at the end of twenty-four hours by Gram's and other methods of staining, and subcultures in various media (gelatin, blood-serum, agar, and litmus milk) were also made, from which pure growths of the different organisms were found."

Wright's Stain.—This is a modification of Leishman's stain, and may be satisfactorily used in routine work. Like Jenner's and Leish-

man's stains, it serves the double purpose of fixing and staining blood films, so that fixing by *heat* is unnecessary.

Method of Preparing Wright's Stain.—Make 100 cc. of a 0·5 per cent solution of sodium bicarbonate in distilled water, and add 1 gram methylene blue. Place the solution in an Ehrlenmeyer flask, and steam in an Arnold steam sterilizer for one hour from the time steam is up. Allow to cool. Pour into a large dish or flask and add, while stirring, enough 1 in 1,000 solution eosin (Grübler, yellowish, soluble in water) until the mixture loses its bright colour and becomes purple, with the formation of a yellowish metallic scum on its surface. On close inspection a finely granular black precipitate appears in suspension. This will require about 500 cc. eosin solution for 100 cc. alkaline methylene blue solution. Collect this precipitate on a filter and allow it to dry in an incubator without washing. When thoroughly dry, a saturated solution of the precipitate is made in pure methyl alcohol (0·3 gram precipitate to 100 cc. alcohol). Filter this saturated solution, and to the filtrate add 25 per cent methyl alcohol, i.e., to 80 cc. of filtrate add 20 cc. methyl alcohol. This is then used to stain with.

For staining :—

1. Drop upon the blood film with a medicine dropper as much of the stain as it will hold without spilling off, and leave it there for one minute. This is chiefly to fix the film.

2. Add to the fluid on the coverglass or slide sufficient water, drop by drop, to make visible a greenish metallic scum upon the surface. For a $\frac{1}{2}$ inch square coverglass 6 to 8 drops are usually needed, but the exact amount does not make any essential difference. Let the stain thus diluted remain upon the film for about two minutes.

3. Wash the film in distilled water and let it stand in water for two minutes or more or until the thinner portions of the film are yellowish pink. The water washes out part of the blue dye and differentiates the stain.

4. Dry cautiously with blotting paper or filter paper (*no heat*) and mount in balsam.

In the stained films, the normal erythrocyte appears yellow or pink ; in cells deficient in hæmoglobin the colour varies from a pale pink, with a large, central, clear area, to a dirty yellow. Polychromatophilic cells take a bluish stain. Granular degeneration or basophilic degeneration shows very well as small bluish dots in a pink cytoplasm. Normoblasts have a pink cytoplasm and a blue nucleus ; in some of these cells the cytoplasm is yellowish, purplish, or bluish. Megaloblasts present a blue nucleus and yellowish or bluish cytoplasm.

References.—[1]*Brit. Med. Jour.* Feb. 25, 1905 ; [2]*Lancet*, May 6, 1905 ; [3]*Amer. Med.* May 13, 1905 ; [4]*Scot. Med. and Surg. Jour.* Feb. 1905 ; [5]*Ther. Gaz.* June, 1905 ; [6]*Deut. Klin.* art. " Sepsis ".

BONES (Plugging with Iodoform). *Priestley Leech, M.D., F.R.C.S.*

After scraping a hollow in a bone, various methods have been used for filling up the cavity, and Mosetig-Moorhof and Jones[1] draw attention to the method of filling the cavities with iodoform combined

with other substances. The cavities should be free from all disease and should be absolutely dry: to attain this, cold sterile dry air is driven into the cavity to be filled until it is dry. The mixture used for filling consists of 60 parts of the finest pulverized iodoform, and 40 parts each of spermaceti and oil of sesame. This is kept ready prepared in large test-tubes two-thirds full, and these are well shaken before using. The principal cases in which plugging can be used are the common osteomyelitic affections, and tuberculous disease of the articulations and bones. In acute osteomyelitis it cannot be used, but is beneficial in chronic osteomyelitis or in the cavity left after necrosis, and in cavities left after scraping in tuberculous bone disease. The mixture for plugging is heated to about 50° C. before using. Moore[2] reports four cases treated in this way.

C. A. Elsberg[3] read a paper on the treatment of chronic osteomyelitis and of chronic bone cavities by **Iodoform Paraffin Wax** filling. Cavities or dead spaces should, if possible, never be left in bone. He recommended the following improvements: removal of the Esmarch bandage from the limb before filling the cavity; the cavity should be flushed with peroxide of hydrogen, and then a small amount of adrenalin gauze introduced, to aid in drying the cavity. His results had been good but not so good as those reported in Germany.

References.—[1]*Lancet*, Jan. 21, 1905; [2]*New York Med. Jour.* May 27, 1905; [3]*Med. Rec.* Mar. 25.

BRADYCARDIA. (*See* Pulse and Blood Pressure.)

BRANCHIOMA. (*See* Potato Tumours of Neck.)

BREAST (Cancer of). *Priestley Leech, M.D., F.R.C.S.*

Mr. W. Sampson Handley[1], in the Hunterian Lectures for 1905, treated of the dissemination of mammary cancer. The subject of cancerous dissemination is in a somewhat hazy and indeterminate condition. Invasion of the axillary glands is universally admitted to be an embolic process, but there are two views as to the process of "regional" dissemination. Some believe that invasion of the pectoral lymphatic plexus occurs by direct cancerous growth along the vessels: others maintain that the cancer cells are swept by the lymph stream through the vessels of the pectoral plexus, and that metastases arise from their casual arrest at isolated points. With regard to metastases in the internal viscera or at distant points in the parietes (e.g. the femur), there appears to be only one theory, viz., that of embolism. The lecturer thinks that the facts of metastases be can better explained on the hypothesis of centrifugal lymphatic permeation than by embolism. M. B. Schmidt's[2] work shows why cancerous epithelium as a rule fails to colonize the blood stream, the reason being, that cancer cells excite thrombosis, and the thrombus, as it organizes and contracts, destroys them.

The secondary deposits which occur in cancer of the breast may be classed under two heads: (1) *The parietal*, viz. those in the skin, the

subcutaneous tissue, the deep fascia, the muscles, and the bones; (2) The *visceral*, those which occur in the abdominal and thoracic cavities and in the central nervous system. These two classes of metastases usually occur in combination, but there are cases where parietal dissemination occurs without any visceral dissemination. Parietal metastases near the scar are usually looked upon as due to centrifugal lymphatic spread, but if they occur all over the body they are generally ascribed to blood invasion. Handley sees no reason why the whole should not be regarded as due to centrifugal lymphatic spread, because as a general rule the nodules nearest the primary growth are the largest, and those farthest away are the smallest, and the oldest nodules also lie near the centre of the invaded area of the skin, the most recent ones near its periphery.

From a survey of a table showing the frequency of osseous metastatic deposits founded in 329 cases of mammary cancer, Handley comes to the following conclusions:—

1. The liability of a bone to cancerous metastases increases with its proximity to the primary growth.

2. The bones distal to the knee and elbow escape invasion except in the rarest instances. The reason why the distal halves of the limbs nearly always escape metastases in cancer of the breast is that by the time the parietal tissues have been invaded as far as the knee and the elbow, if not earlier, death intervenes. The points of the femur and humerus, at which secondary carcinoma usually appears, are in the femur, at or just below the great trochanter, and in the humerus the middle part, and in both bones the area invaded is the subcutaneous area which lies nearest the trunk; and if cancer spreads centrifugally from the primary focus along the deep fascia this is exactly what would happen, and the parietal growing edge of a cancer of the breast does actually lie in this area Since the main lymphatic plexus is situated upon or close to the deep fascia, it is probable that parietal extension takes place primarily in the plane of the deep fascia, and that the nodules in the skin, muscles, and bones are local efflorescences from the cancerous fascial lymphatic plexus; and on comparing the results of two operators, one of whom removes a moderate area of skin, and, undermining the flaps, excises the deep fascia much more widely than the skin; the other removes a wider area of skin, but does not undermine the flaps, and therefore removes a smaller area of deep fascia; the latter operator has more skin recurrences, because, in spite of his wider removal of skin, growth subsequently extends to the skin from the infected area of the deep fascia which has been left behind.

The lymphatics of the skin do not, according to Sappey and the author's observations, form beneath the dermis. The deep cutaneous plexus described by Arnold, and probably the main stream of lymph from the breast, passes by the retro-mammary lymphatics to the pectoral fascia and thence indirectly to the axillary glands. The pectoral lymphatic plexus is often spoken of as if it were an anatomical entity, while in reality it is merely a conventional subdivision of the

deep fascial lymphatic plexus, a network of intercommunicating channels which invest the entire body. This great plexus is divisible by the median plane of the body, and by horizontal planes passing through the clavicles and through the umbilicus into six catchment areas, three on either side, draining respectively into the cervical, the axillary, and the inguinal glands. Within each area a special set of trunk lymphatics arises from the plexus, and converges on the corresponding set of glands. The line or zone separating adjacent areas may be called the lymphatic water parting, and is anatomically a zone of narrow tortuous channels, nowhere traversed by trunk lymphatics—a region consequently, where the lymph stream is at its feeblest, and where even very fine particles are liable to be arrested. This parietal lymphatic system, co-extensive with the surface of the body, receives from the skin and the appendages (including the breast) numberless fine vertical tributaries. In its deep aspect the fascial plexus communicates by fine anastomotic vessels with the muscular and periosteal lymphatics.

The advance of carcinoma along the ramifications of the great parietal lymphatic plexus may be divided as follows :—

1. *Dissemination within the limits of the breast.*—It is uncertain whether this proceeds by embolism or by continuous growth along the vessels. Stiles favours the former view ; Handley, from investigations in the extra-mammary tissues, favours the latter view.

2. *Extension of growth to the pectoral fascia.*—Haidenhain's observations showed that cancer spreads from the breast along lymphatics running into the pectoral fascia by continuous growth, less often by embolism. It is an important fact that cancerous lymphatics may be found in the pectoral fascia before the growth has become adherent to the muscle, and prior to adhesion to the skin.

The parietal metastases of breast cancer are especially frequent and widespread, not on account of any special cancerous proclivity of the skin in the subjects of breast cancer, but because of the intimate connection between the lymphatics of the breast and those of the great fascial plexus.

3. *Embolism of the axillary glands.*—It is probable that embolic invasion of the axillary glands cannot occur until the microscopic invasion of the pectoral fascia has taken place. As soon as cancer cells intrude from the smaller vessels into a trunk lymphatic, they are swept by the stream to the axillary glands, and after long delay they penetrate these glands and the supra-clavicular glands, and so attain the blood stream. This route is usually regarded as the main avenue of dissemination, and it would be except for one factor—the destructive action of the blood on cancerous epithelium, which was demonstrated by Schmidt, and by which cancer cells which gain access to the blood are reduced to impotence.

4 *Retrograde embolism produced by a reflux lymph stream.*—As soon as the lymphatic glands are obstructed by growth, a reflux lymph stream must pass across the middle line to the opposite axillary

glands, upwards to the cervical, or downwards to the inguinal glands. Very great stress has been laid by some authors upon this factor in dissemination, but on account of the valves in the lymphatics it cannot take place to any extent in trunk lymphatics, and towards the periphery of each lymphatic area the trunks break up into fine plexuses which are not large enough to carry cancer cells to the opposite axillary glands ; the opposite breast or the inguinal glands are never found to become cancerous early in the case, as should occasionally happen if cancer cells can reach them embolically from other lymphatic areas.

5. *Centrifugal lymphatic permeation.*—The direct lymph stream is filtered of its cancer cells at the first set of glands ; the reflux stream is similarly filtered in the fine anastomotic plexuses through which it must pass to adjoining lymphatic areas, and thus the lymph *stream* is ineffective as a means of *general* dissemination ; it is effective only within the limits of the lymphatic area, where the primary focus is situated. It is by their own proliferative power that cancer cells succeed in traversing the meshes of the lymphatic filter in which they are imprisoned ; by actual centrifugal growth along the meshes of the lymphatic plexuses which are in relation to the primary neoplasm do cancer cells ultimately succeed in penetrating the fine anastomotic plexuses which, at the periphery of the lymphatic area concerned, bar the way into surrounding lymphatic areas. To this process Handley has attached the term of permeation. Advancing in this way slowly and centrifugally from one lymphatic area to the next, permeation may conceivably bring about the impregnation of the entire lymphatic system with cancer, provided only that the cancer cells possess sufficient proliferative power. He has proved this by histological preparations. The permeated lymphatic does not remain in this condition, but certain changes take place which the author calls perilymphatic fibrosis, and which usually ends in its destruction. This perilymphatic fibrosis is caused by a reaction of the tissues (like inflammation) to the cancer cells ; it only occurs in the late stage of permeation, and is usually absent at the microscopic growing edge of the carcinoma, which continues to advance ; the invading cells manage to keep always just ahead of the pursuing inflammatory reaction. The evidence of the original continuity between the parietal metastases and the primary growth in the breast is destroyed by this perilymphatic fibrosis. He describes three zones of secondary growth round the primary growth.

(*a*). *Zone of isolated nodules.*—This zone immediately surrounds the primary growth ; in this zone isolated or confluent nodules are present in the various layers of the parietes ; the intervening permeated lymphatics have been partially or completely destroyed by peri-lymphatic fibrosis.

(*b*). *Zone of active perilymphatic fibrosis.*—Here permeated lymphatics are recognizable in the deep fascia undergoing the various stages of fibrous obliteration. Nodules are commencing to form in the adjacent layers. Beyond this zone the process of permeation, following the

line of least resistance, is usually found only in the deep fascia, where the main lymphatic plexus is situated.

(*c*). *Zone of fascial permeation.*—This zone is sub-divisible into a proximal and a peripheral zone. In the proximal portion the permeated and distended lymphatics of the deep fascia are surrounded by perivascular collections of leucocytes. Permeation has not, to any extent, invaded the small tributaries of the fascial plexus, and cancer is found only in the deep fascia and the immediately overlying subcutaneous fat. In the peripheral portion of the zone which forms the microscopic growing edge, the permeated fascial lymphatics have not yet been distended by the cancer cells within them, and no excess of leucocytes is present, either around the permeated lymphatics or in the blood-vessels near them. Inflammatory reaction to the cancerous invasion is thus entirely absent at the growing margin.

Visceral Dissemination.—The great frequency of visceral metastases in breast cancer is mainly owing to the extension of cancerous permeation along the fine anastomoses which, piercing the parietes, connect the lymphatic plexus of the deep fascia with the sub-endothelial lymphatic plexuses of the pleura and peritoneum, and with the mediastinal and portal glands. In visceral dissemination, permeation, especially of the subserous plexuses, plays an essential part.

Abdominal and thoracic invasion are often independent events. Thoracic metastases occur without any invasion of the abdomen in 10 per cent of the early cases, and in 22 per cent of the late ones. Conversely, abdominal metastases occur without any invasion of the thorax in 17 per cent of the early, and in 11 per cent of the late cases; this latter fact is especially important, as it is generally supposed that the abdomen is always invaded by way of the thorax, but from these figures it appears that abdominal and thoracic invasion are, or may be, separate events. The abdomen may be invaded transperitoneally or retroperitoneally; the latter is a late event. He has obtained direct evidence of invasion through the abdominal parietes of the epigastric cavity, and the cancer cells may be implanted by the influence of gravity down in Douglas's pouch. Epigastric invasion commences earlier than thoracic invasion. Owing to its close contact with the cancerous epigastric peritoneum, and to its lymphatic relations with the portal glands, the liver is nearly always the first organ to suffer. Rarely, cancer cells may fall through the peritoneal cavity and cause pelvic metastases before the liver is invaded. The liver may be infected by the implantation of cancer cells on its surface, or permeation may pass along the lymphatics of the falciform ligament to the portal glands, and thence secondarily extend into the interior of the liver.

Retroperitoneal invasion may occur from the thorax. When cancer cells obtain access to the pleural cavity, they tend under the influence of gravity to implant themselves especially about the lower limit of the parietal pleura; permeating the subpleural lymphatic plexus they soon reach the lymphatics of the diaphragmatic crura; these lymphatics drain into the lumbar glands of the abdomen; the

kidneys, the suprarenals, the lumbar glands, the lumbar vertebræ, and the posterior portion of the liver suffer first in retroperitoneal invasion of the abdomen. Retroperitoneal invasion may be found in the absence of thoracic invasion by permeation of the fascial lymphatics of the loin, thence by intramuscular lymphatics to the perirenal fat and the lumbar glands. In rare and late cases the abdomen may be invaded from the thorax by direct infiltration of the substance of the diaphragm in its anterior part.

The anterior mediastinal glands are not often invaded. Torök and Wittelshofer, out of 366 necropsies, found cancer in only 6·5 per cent. Invasion of the pleura by transpleural implantation is very frequent. In the lungs it is the exception to find nodular deposits, such as might be supposed to result from embolism ; the lungs are generally invaded by permeation which extends into them, either from the pleura or from cancerous bronchial glands. An adherent pleura has a protective action against invasion.

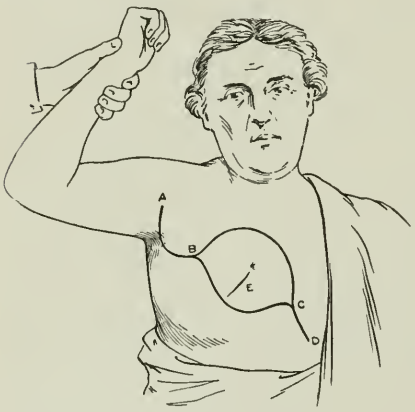


Fig. 25.

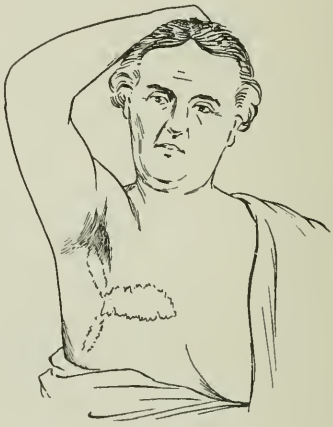


Fig. 26.

The practical conclusions are, that the deep fascia should be removed as widely as possible, and in order to prevent epigastric invasion, the usual incision should be prolonged downwards over the linea alba for about two inches, the flaps undermined, and the fascia excised as far down as a horizontal line running two inches below the ensiform cartilage, or even lower if the growth is in the inferior part of the breast. The insufficient removal of the epigastric deep fascia accounts for the excess of abdominal over thoracic visceral occurrences, after the modern operation for removal of cancer of the breast.

Handley [3] had previously drawn attention to the need for removing more of the deep epigastric fascia. The skin incision should extend 3 inches below the end of the ensiform cartilage. *Fig.* 25 shows how the author suggests this should be done, representing a case operated upon in January, 1903. A B is the axillary flap incision ;

B C the annular incision circumscribing the growth; C D the incision to allow a removal of the epigastric deep fascia; E is a deep pucker caused by the contraction of the growth. *Fig.* 26 is from a photograph of the same case eighteen months later, and indicates the tri-radiate scar resulting from the incision A B C. The scar had become freely movable on the thorax, and the pull of the arm had stretched it to nearly the width of an inch. The movements of the arm, as shown, were practically unimpaired.

Tuffier [4] thinks that isolated skin nodules of cancer, in cancer of the breast may be caused, by propagation in the hair follicles where the growth has ulcerated.

Schmidt [5] has made a statistical collection of all the hospital cases treated by Braun, of Gottingen, in the course of the last nineteen years. The results, he thinks, show that the climacteric period is an important factor in the etiology of mammary cancer in women; that disposition to the disease is not influenced by the previous number of pregnancies; that acute attacks of mastitis due to lactation have little, if any, influence; but that chronic or subacute mastitis caused by frequent or continuous pressure on the breast, or by contusion, often result in the formation of hard and persistent nodules in the gland which are liable to undergo cancerous degeneration. He strongly insists on the necessity for early operation.

Rodman [6], in doubtful cases, obtains the consent of the patient to a radical operation, and has a microscopical examination made of the freshly excised tumour (where it appears to be innocent), or of an excised piece where it seems to be malignant; usually in less than ten minutes the report is returned, and either the operation is proceeded with, or if innocent, the incision is sewn up after removal of the tumour.

J. Collins Warren [7] gives an analysis of 100 consecutive cases of cancer of the breast. In 5 cases cancer had developed as a secondary process in either a cyst wall or in that kind of inflammatory condition of the gland tissue which is accompanied by cystic degeneration. In another case cancer was found growing in a small fibroma: in 6 cases there was a history of abscess, and a history of some kind of blow in 16 cases. There was thus a pre-existing lesion of some kind in 28 cases, and a family history of cancer in 18 cases. Of these 100 cases, there are 26 cases that may be regarded as cured, i.e., either are now alive or have died from other causes than cancer at a time three years or more after the operation, or after the removal of recurrent growths; two of these cases had recurrences, one five years and another nine years after operation; these nodules were removed, one fifteen years ago, and one ten years ago, and both patients are alive and well. There are four other cases alive and well without further recurrence, in whom recurrence nodules have been removed. There are thus nearly one-third which may be classed as cured. As regards the pathological cures, we get 100 per cent of cures in colloid cancer and Paget's disease; in adeno-carcinoma 66 per cent cures; in scirrhus 43; in cancer 23; and in medullary cancer only 7 per cent cures. The

presence of adhesion of the skin diminishes by one-third the chances of cure. No permanent cure has been obtained where the supra-clavicular glands were diseased.

His present mode of operation is well illustrated by *Fig. 27* and *Plates III, IV*. *Fig. 27* shows the racket-shaped incision and amount of skin included in it, also the flap, which is apparently diminished by the perspective. In *Plate III, Fig. A* shows the preliminary dissection of integuments, leaving a central mass of which the primary nodule is the centre. In *Fig. B* the insertion of the pectoralis major is exposed and the knife is about to divide the muscle at this point. The latissimus dorsi is also exposed, showing the limit of dissection outwards. *Fig. C* shows the division of the insertion of the pectoralis minor. In *Fig. D* the divided muscles permit retraction downward and inward of the breast and axillary contents, and enable the operator to freely expose the axilla, and tie the main branches at their origin. In *Plate IV, Fig. E*, the mass to be removed has been reflected towards the median line, the large wound being thus uncovered only at the last moment. The origin of the pectoralis minor has been divided, and that of the pectoralis major is being divided as the final step of the operation. *Fig. F* illustrates the dissection of a pad of fat containing three infected glands, from subclavian triangle. The sternomastoid drawn inwards exposes the internal jugular vein: note also the scalenus anticus, upon which the pad rests. The glands and surrounding adipose tissue are readily stripped from the muscle by a blunt dissector. The external jugular vein, or a branch of it, is usually tied. *Fig. G* shows mode of closing the wound; the flap being turned in and caught with one suture, and gradually pushed into position by peripheral sutures. Note the shortening of the long axis of the wound by the stitching on the inner border. *Fig. H* shows the final adjustment of the flap, and position of the gauze drain, which is left in for twenty-four hours. The final sutures are still to be tied. The mortality has only been 2 per cent; one from acute septic infection, and the second from pulmonary embolism caused by allowing the patient to sit up too soon, and move about too freely after the operation.

Fig. 27.

MAMMARY CANCER. (WARREN'S OPERATION.)

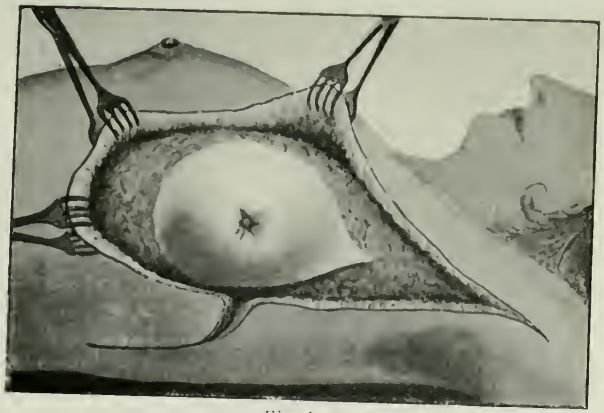


Fig. A.

Fig. B.

Fig. C

Fig. D

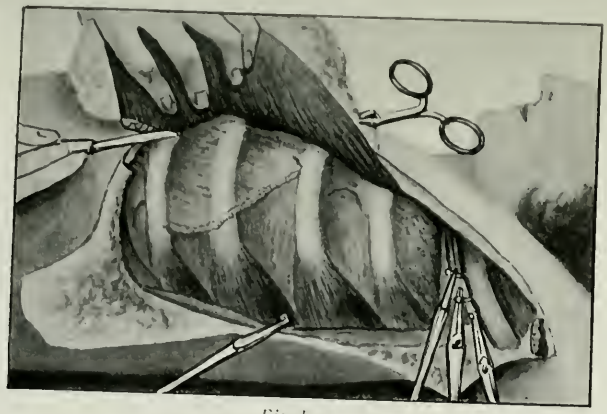


Fig. E.

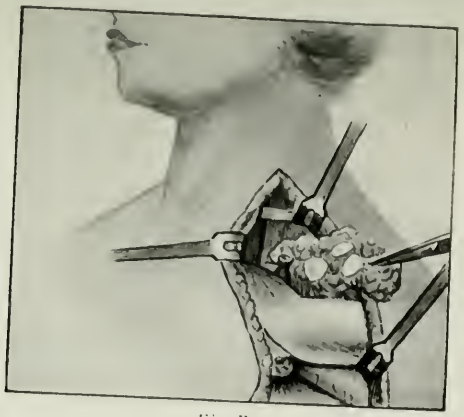


Fig. F

Fig. G.

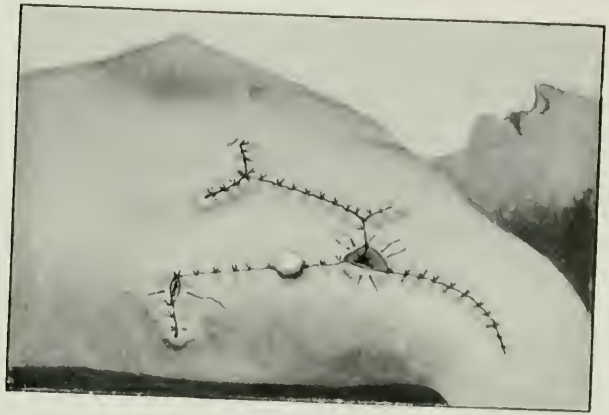


Fig. H

Mr. Hugh Lett[8] read a paper on an analysis of 99 cases of inoperable carcinoma mammæ treated by **Oöphorectomy.** In no case does this cure the cancer, because whenever the growth had disappeared, subsequent to oöphorectomy, it afterwards reappeared locally or elsewhere; 36·4 per cent of all cases operated upon were materially benefited by the operation; the improvement was mainly shown in relief from pain, marked improvement in health, diminution or even disappearance of the growth, healing of ulcers, and prolongation of life. The most favourable age was from forty-five to fifty. In relatively young people it should be given a further trial, but in patients over fifty it was rarely worth doing. The fact that the patient had passed the menopause did not contra-indicate the operation. **Thyroid Extract** was not a necessary factor in the treatment, but the results had been better when it had been given. Secondary growths in the viscera contra-indicated the operation; rapidity of growth or an early recurrence after the primary operation made the prognosis unfavourable.

Lehmann[9], from some statistics regarding the nursing of the children and the incidence of cancer, says a preponderance of cancer in the female sex is seen in those districts where the mothers seldom or never nurse their offspring.

Heinrich Schröder[10] writes upon the cure of breast cancer, and he takes the cases which have been operated upon in the surgical clinique in Rostock for twenty-five years, from 1875–1901. These cases were under Trendelenburg, Madelung, and Garrè. The number of cases was 347, but among these are not included those where an imperfect operation was done, nor those where the disease was so far advanced that operation was only performed as a palliative treatment. Out of the 347 cases, 16 died at the conclusion of the operation; this gives a mortality of 4·61 per cent; 2 patients died on the same day from collapse due to fatty heart; 5 died of erysipelas; 2 of pneumonia; and 5 of pyæmia; in 3 patients who died from the presence of cyanosis and dyspnœa a post-mortem showed widespread metastases in lungs, liver, and pleura. The mortality is higher than that shown by the more recent statistics, but the larger number of the patients were treated at a time when antiseptic treatment was not so perfect as it is at present. Out of all the cases 45 have remained cured and are still living, the time since operation varying from 27½ to 3¾ years; 4 others died from some other disease who had been 10½, 10½, 6½, and 4½ years free from recurrence, and 5 cases which had also remained free for several years, but the date of whose deaths are unknown, and 6 cases who had remained free for from 9 to 3 years, but about whom nothing is known. There are, therefore, 61 cases which have remained free from recurrence for more than 3 years. The most favourable age for cure is between seventy and eighty, which gives 6 cures out of 20 cases; the most unfavourable thirty to forty, which gives 2 cures out of 29. These results are not so good as other authors give, and Schröder thinks that Volkmann's three years' limit is too

little, and that at least six or seven years should be taken as the limit for a definite cure.

References.—[1]*Lancet*, April 8, 15, and 22, 1905; [2]*Die Verbreitungswege der Karzinome*, Jena, 1903, quoted loc. cit.; [3]*Brit. Med. Jour.* Oct. 1, 1904; [4]*Bull. Méd.* Dec. 3, 1904; [5]*Deut. Med. Woch.* No. 15, 1904, *Brit. Med. Jour.* July 9, 1904; [6]*Ibid.* Oct. 1, 1904; [7]*Ann. Surg.* Dec. 1904; [8]*Brit. Med. Jour.* and *Lancet*, Jan. 28, 1905; [9]*Inaug. Disser.* München, 1903; *Karzinomliteratur*, 1904; [10]*Beitr. z. klin. Chir.* xlv. Band, 3 Heft.

BROMIDROSIS. *Norman Walker, M.D.*

Weiss[1] recommends **Permanganate of Potash.** The feet must be carefully washed and rubbed with wool soaked in benzene, and then bathed in a solution of permanganate of potash, 1 per cent for fifteen minutes. This should be done at night and before getting up they should be powdered with the following:—

R	Permanganate of potash	13	Oxide of zinc	18
	Alum	1	Chloride of zinc	āā 18
	Talc	50		

Separate the toes with a little wool and change the socks daily. The treatment is continued for two or three weeks, the strength of the permanganate of potash is gradually raised to 6 per cent, and the temperature of the bath to as high as can be borne.

Gaucher[2] recommends the following treatment. Morning and evening, a **Foot Bath** with **Borax** and **Tincture of Benzoin.** As the disease habitually affects the soles and the region between the toes, 2 to 3 litres of water, with 10 grains of borax and a soup-spoonful of tinct. benzoin, suffice. The bath should last for ten or fifteen minutes. The feet should then be freely powdered with salicylic talc, 1 in 50.

References.—[1]*Sem. Méd.* No. 37, 1904; [2]*Mal. Cut. et Syph.* March, 1905.

BRONCHIECTASIS. *Wilfred J. Hadley, M.D., F.R.C.S.*

There are some interesting papers on this condition this year, as well as upon one of its frequent complications, viz., fœtid bronchitis.

Habershon[1] classifies the forms as cylindrical and sacculated, or a combination of the two. The tubes are occasionally atrophied, but more commonly their walls are thickened by chronic inflammation. He ascribes the majority of cases to chronic fibrotic changes in the lung; which fibrosis may start in the peribronchial tissue, in the alveoli themselves, or in the pleura. The dangers of the condition lie in the complications, which he gives as follows: Acute inflammatory attacks, such as acute bronchitis, broncho-pneumonia, or pneumonia, are extremely common. During the decomposition of retained sputum septic attacks may occur, which include gangrene of lung, septicæmia, pyæmia, and sometimes secondary abscesses, most commonly in the brain. Empyema or ulceration through into the pleura with formation of pneumothorax, or the pericardium may become involved. The strain on the heart may cause cardiac dilatation, or death may occur from gradual exhaustion.

Barty King[2] analyses 72 cases occurring at Brompton Hospital,

and finds that 75 per cent to 80 per cent occur as the result of chronic bronchitis. But it must be remembered that his 72 cases are collected from post-mortem (i.e. fatal) cases; whereas, as he says, the majority of cases of bronchiectasis which come into the Hospital leave, and are not seen again. It is this class of case which, occurring in children, often continues for years as a damaged lung, (resulting from unresolved broncho-pneumonia), and gives rise to but little inconvenience beyond recurrent attacks of acute and subacute bronchial catarrh.

TREATMENT.—It follows from the consideration of the complications above mentioned that our chief aim is to prevent retention and decomposition of the sputum, and, if fœtid bronchitis should occur, to correct it as soon as possible. In order to promote the emptying of the tubes, if coughing is ineffectual, we can help matters by inverting the patient, if a child, or by getting an adult to assume the genu-pectoral position, or lean well over the edge of the bed, so that his head is nearly touching the floor while coughing. **Antiseptics** are used in various ways—by the mouth, inhaled, by intratracheal injections or even by hypodermic, through the chest wall directly into the bronchiectatic cavity. The reviewer has found no treatment so successful as subjecting the patient to **Vapourized Creosote** in a small, more or less, airtight chamber. By this means strong vapour of creosote is drawn, through the mouth, directly into the dilated tube, with remarkably good and rapid results in reducing or abolishing fœtor and all that that means to the comfort and safety of the patient. It must be mentioned that it has been attempted to drain these bronchiectatic cavities, but the results have not been brilliant successes.

REFERENCES.—[1]*Clin. Jour.*, Jan. 6, 1904; [2]*Scot. Med. and Surg. Jour.*, Jun., 1904.

BRONCHITIS AND EMPHYSEMA. *Wilfred J. Hadley, M.D., F.R.C.S.*

Fred. J. Smith[1] says that the commonest condition of the lungs at or after 40 years of age is one of emphysema. At the same time he points out that emphysema is practically unknown in the lungs of a child, unless there is some very obvious disease to account for it. He considers that this fact has a very strong bearing on the pathology of chronic bronchitis. The effects he sums up as follows, speaking of emphysema: (1) It is essentially a senile change; (2) It causes very great liability to bronchitis and inflammatory exudations; (3) Bronchitis and inflammations tend to make it much worse: (4) The heart suffers very much in proportion to the degree of emphysema present. He regards emphysema as coming first, and the chronic bronchitis coming as a result; though he quite agrees that the two together form a vicious circle, each tending to increase and make the other worse.

On these considerations he points out the necessity for checking anything which is likely to give rise prematurely to emphysema (e.g. violent exercise, arterial degeneration), and urges that anything that

can should be done to limit this decline in the powers. He advises that patients should be cautioned against taking violent exercise, and also as to the importance of avoiding fresh chills—or treating them carefully when they have contracted them. He speaks highly of the use of **Creosote** in chronic bronchitis, and the reviewer has also seen marked benefit from its use in such cases. In the acute attacks which so often occur in the chronic bronchitic, he bears testimony to the beneficial effects of **"Timely Bleeding"** to relieve the strain on the right heart, and although he admits that for the failing heart, under similar circumstances, he knows no such reliable stimulant as **Digitalis,** he warns us not to use large doses, (℥3 to 4 of the tincture, ℥j of the infusion or gr. 1 of the powdered leaves being quite enough) as the cumulative action is likely to appear. For the after effects of chronic bronchitis, seen in increasing emphysema and dilated right heart, several clinicians have recommended the treatment by **Compressed Air.** Briefly, the method is for the patient to inspire compressed air, and to expire into rarefied air. Many such patients experience great relief from expiration into rarefied air, and when there is existing bronchial catarrh, inspiration of compressed air prevents the irritative cough which expiration into rarefied air occasionally produces. The treatment can be carried out in pneumatic chambers, and many patients are treated in this way at Meran and Reichenhall, where a full apparatus for doing so is installed.

Fibrinous Bronchitis.—Moser[2], in reporting a case of this somewhat rare affection, enters into several points of interest with regard to it. Etiologically he notes the great tendency for it to recur in the same patient, that it is thought by some to be associated with skin affections, such as pemphigus. His case had contracted syphilis years before, which he regards as an important etiological factor.

He points out that fibrinous coagula (ribbon-shaped or cylindrical) may be expectorated in many diseases, such as influenza, typhoid, pneumonia, pleurisy, diphtheria, etc., but that such cases are to be distinguished from fibrinous bronchitis. *The casts* are coughed up as balls, and need careful unravelling in water before their characteristic, branched appearance presents itself. Microscopically they present concentric, or irregularly-arranged, lamellæ of tissue which, according to some observers, is fibrin, and to others mucin. Degenerated epithelium, mono-nuclear cells, blood cells, hæmatoidin crystals, and Charcot-Leyden crystals have all been described entangled in the meshes of their structure. Curschmann's spirals have also been seen.

He describes two forms : *the acute* form in which death from suffocation is to be feared, and the *chronic* in which the supervention of tuberculosis is common, (in 10 out of 21 autopsies, by Model from Bäumler's clinic). A further danger exists in the extension of the membrane to the air-cells—fibrinous pneumonia.

Treatment.—For this he recommends the use of **Inhalations of Steam** or **Lime Water,** or **Sprays of Bicarbonate of Soda,** to soften and loosen

the membrane. Emetics to help its expulsion. **Oxygen** may be necessary to relieve urgent dyspnœa. He strongly recommends the early, and continuous, use of **Creosote** internally; and being mindful of the tendency to subsequent tuberculosis points out the necessity for careful after treatment.

Ritchie[3] inclines to Fränkel's theory to explain these cases, viz., that, owing to a permanent denudation of a portion of the bronchial mucous membrane of its epithelium, there is a copious pouring-out into the bronchi of coagulable fluid, which afterwards coagulates and forms a fibrinous cast.

REFERENCES.—[1]*Clin. Jour.*, Nov. 4, 1903; [2]*Med. Rec.*, Aug. 6, 1904; [3]*Montreal Med. Jour.*, Feb., 1905.

CANCER. (*See* BREAST, DUODENUM, FALLOPIAN TUBE, RECTUM, TONGUE, *and* UTERUS.)

CANCER (Inoperable). *Priestley Leech, M.D., F.R.C.S.*

Shaw-Mackenzie[1] has treated two cases of inoperable cancer with apparent arrest of the disease. One was a carcinoma of the tongue in an old soldier, treated by hypodermic injections of **Soap Solution**, and the other a case of carcinoma of the neck, similarly treated with **Chian Turpentine.** Deep injections of the latter are made into the subcutaneous tissues. The muscular tissue must be avoided, as injections into it cause pain and sense of tension. The buttock is a suitable place, and a stout needle is necessary, but an iridoplatinum needle is best. The site of injection is rendered aseptic, and a piece of ice is placed on it to relieve the pain. Five minims of a 20 per cent combination of Chian turpentine with olive oil is the quantity to begin with, increasing by 5 minims on alternate days up to 60 minims. With the soap solution he tried 5 minims of a 1 per cent solution, increasing by 5 minims on alternate days to a full dose of 60 minims every fourth day. Decrease of tumour, diminution of fœtor and discharge, and cessation of pain occurred. He thinks the use of both of these is justifiable in *inoperable* cancer.

REFERENCE.—[1]*Med. Press*, Oct. 19, 1904.

CARDIAC ARHYTHMIA. (*See* PULSE AND BLOOD PRESSURE.)

CATARACT. (*See* LENS.)

CHOREA. *G. F. Still, M.D.*

The relation of chorea to rheumatism has long been a difficult problem, but Spiller[1] thinks that this relation has been greatly overestimated. In most of his cases he could not find any. As Taylor[2], however, points out, there are large statistics to show that 72 per cent of choreic cases show evidence of rheumatism in themselves, and to these must be added cases which show rheumatism in the family history, so that the proportion of choreic cases associated more or less closely with rheumatism is too high to allow of any explanation but that chorea is, in a majority of cases, a manifestation of rheumatic infection. How

this infection acts is uncertain. Poynton and Paine as well as other observers have found micro-organisms in the brain or meninges, but if these are the cause of chorea it is still unknown whether they act by producing a toxin which affects the blood, or whether they act locally upon the nerve elements. Taylor himself thinks they may act in both ways. The same writer holds that irregularity of the heart in chorea is not due to chorea of the heart muscle, but simply to the irregularity of the respiratory movements. Galdi[3], however, considers that there is a true chorea of the heart muscle, and that this is proved especially by the rapid variations in the area of cardiac dulness.

According to Taylor a fatal result does not occur in as many as 2 per cent of cases of chorea, but when it does occur it is usually in a first attack, occurring about the age of puberty. Several fatal cases were recently mentioned at the Philadelphia Pediatric Society[4]. In most of them, as is usual, cardiac lesions, endocarditis, or pericarditis with endocarditis, were present. A case of chorea in which death occurred from meningitis, is reported by Leoné and Gaudeau[5], and as rheumatism is said occasionally to be complicated by meningitis, it might be expected that chorea also would show a similar lesion occasionally, especially if the micro-organism of rheumatism is to be found in the meninges as some observers state. But in the present case, that of a girl aged nineteen years, the violent choreic movements had given rise to extensively ulcerated bedsores, and a staphylococcus was found in the turbid cerebrospinal fluid obtained by lumbar puncture, so that if meningitis was present—and there was apparently no autopsy to confirm it—it was probably due to septic infection from these ulcerated areas. The occurrence of a hysterical pseudo-meningitis in the course of chorea is reported by Barjon[6].

Treatment.—Berg[7] recommends that the child should be kept in bed in a darkened room in the afternoon for several hours; school is absolutely to be forbidden even for mild cases. As the infection of rheumatism is thought to enter by the tonsils and nasopharynx, adenoids or enlarged tonsils should be removed. (This writer does not say whether during the chorea or not: it is to be presumed not during the attack, which might be much aggravated by such a proceeding.) As a hypnotic, if the case is violent, he advises **Veronal** in doses of 1 grain or a little more. Amongst special therapeutics for chorea, he places **Sodium Salicylate** first, given in moderate doses every five hours, "sufficient to produce a slight ringing in the ears"; when this toxic symptom is produced the drug is to be withheld until it ceases. **Arsenic** he would give in doses increased from 1 drop "until slight swelling of the eyelids is present in the morning." It should be given in water or Vichy, after meals; any signs of gastric irritation necessitate its omission, as also does albuminuria.

The value of salicylates is mentioned also by Zaussailoff[8], who says that he obtained striking results with it in cases in which the rheumatic diathesis was thought to be entirely lacking. Kobak[9], regarding chorea as rheumatic, has used **Aspirin** in one series of cases,

and arsenic in another. He concludes that in cases with rheumatic antecedents aspirin gives the better results: in other cases, **Arsenic** or **Cacodylate of Sodium** gives more benefit. Shaikevitch[10], after using arsenic in large doses for chorea, concludes that no beneficial influence has been proved, and that in view of the diarrhœa or vomiting or even more serious neuritis which has resulted in some cases, it should not be used for children in large doses. Tull[11] reports a severe case of chorea in which, in spite of veronal, opium, valerian, and arsenic, the violent movements continued until **Apomorphine**, gr. $\frac{1}{10}$, was administered hypodermically: the movements then rapidly subsided, and the apomorphine was continued, gr. $\frac{1}{20}$ by mouth every three hours, with arsenic. The girl was aged fifteen years. Grenet[12] recommends emetics in chorea, but would use **Tartar Emetic** as less dangerous than apomorphine for young children. It is given once daily for three consecutive days in doses respectively of 0·02 cgrams, 0·03 cgrams, and 0·04 cgrams; then after an interval of three to five days another series of doses is given for three days, 0·03 cgrams, 0·04 cgrams, and 0·05 cgrams. It may be necessary even to give a third course of it.

References.—[1]*Jour. Amer. Med. Assoc.* Feb. 11, 1905; [2]*Paralysis and other Dis. of Nerv. Syst. in Child.* London, 1905; [3]*Il Policl.* Nov. 21, 1903; [4]*Arch. Ped.* June, 1905, p. 474; [5]*Ann. de Méd. et Chir. Inf.* July 15, 1905; [6]*Arch. de Neurol.* July, 1904, p. 58; [7]*Arch. Ped.* Jan. 1905, p. 34; [8]*Wratchebnaja. Gaz.* 1904, No. 6; [9]*Arch. f. Kinderh.* 1903; [10]*Vratch.* Sept. 1903; [11]*Pediatr.* Aug. 1905, p. 528; [12]*Arch. Gen. Méd.* May, 1905.

CHOROID. (*See* Retina and Choroid.)

COLITIS (Surgery of). *P. Lockhart Mummery, F.R.C.S.*

It is important to remember that colitis is often a symptom rather than a disease: the colitis being merely secondary to some local trouble: and if this is not detected and cured, any treatment adopted for the cure of the colitis is more than likely to be unsuccessful. Thus Beck[1] in a series of 500 cases of colitis found chronic inflammations present in the neighbourhood of the colon in 394, and the cure of the colitis depended more or less on their removal. He found the most frequent causes to be appendicitis, disease of the gall-bladder or stomach, and inflammatory conditions of the female genitals. Before deciding on treatment in a case of colitis: (1) The cause of the colitis should be carefully determined; (2) If the cause of the colitis is a neighbouring inflammatory process, this should be attended to by operative means: (3) When carcinoma or tubercle is the cause of the colitis the local lesion should be attacked by operation: (4) Colitis found to be of different origin must be treated dietetically; (5) Obstinate cases, which are not improved by these measures, may be treated by operation and anastomosis of the ileum and sigmoid.

Lockwood[2] draws attention to the fact that symptoms of colitis may be the most prominent feature in cases of appendicitis, and that the cure of the condition depends in such cases upon the removal of the chronically inflamed appendix. He describes several cases of colitis

in which, after the patient had been kept in bed and under observation for a time, the appendix was found to be diseased, and its subsequent removal followed by the disappearance of the colitis proved the appendix to have been the real cause of the trouble.

Carcinoma situated high up in the rectum or in the sigmoid flexure may give rise to symptoms which are indistinguishable from those of colitis. Cases of carcinoma occur in which there is frequent diarrhœa, accompanied by the discharge of mucus in large quantities, and no blood has been noticed in the stools. In such a case only the most careful examination will enable the tumour to be detected and save an erroneous diagnosis of colitis.

In all cases of colitis in which a definite cause for the condition cannot be discovered, a careful examination of the upper rectum and sigmoid flexure should be made with the sigmoidoscope (see Rectum, Cancer of). Such an examination will often result in the discovery of some local cause for the mischief. **Sigmoidoscopy** will often prevent the serious mistake of treating for colitis a case which is really one of high carcinoma of the bowel.

Murray[3] has recently advocated the operation of **Appendicostomy** in cases of intractable colitis and chronic constipation. This operation consists in bringing the appendix out through a small wound in the right iliac fossa, and cutting the end off. The opening thus formed into the cæcum is then utilized for the purpose of irrigating the colon or for the introduction of suitable aperients. Keetley[4] has also performed this operation, and speaks well of it in suitable cases.

References.—[1]*Arch. f. klin. Chir.* vol. 74, No. 1 ; [2]*Brit. Med. Jour.* March 4, 1905 ; [3]*Ibid*, June 10, 1905 ; [4]*Ibid*, June 17, 1905.

COLLES'S FRACTURE.

Priestley Leech, M.D., F.R.C.S.

Andrew Fullerton[1] has a very good article on this fracture, which is well illustrated by skiagraphs. The styloid process of the ulna is frequently fractured, and he believes there are two factors at work: the internal lateral ligament which tears off the tip, and the triangular fibro-cartilage, which produces fracture near the base. The symptoms of fracture of the ulnar styloid are pain and tenderness often out of all proportion to the gravity of the condition. As regards the results of fracture of the ulnar styloids, it may unite sometimes in normal position, sometimes a little to the radial side. It may remain distinct from the ulnar (this is a frequent occurrence), or it may become thickened and enlarged, and it may disappear altogether. He does not find that impaction of the radius is so common as some believe.

In Colles's fracture there are the following conditions as regards deformity :—

(*a*). There may be no deformity.

(*b*). Those cases where dorsal displacement is the principal feature. These are by far the most frequent.

(*c*). Those in which the displacement outwards is most marked.

(*d*). Those in which the displacement is forwards—a very rare form.

The complications are :—

1. Fracture of lower end of ulna.
2. Fracture of styloid process of ulna (this occurred in 52 per cent of his cases).
3. Impaction well marked in 12 cases out of 45.
4. Comminution.
5. Rupture of the triangular fibro-cartilage, allowing of separation of the radius and ulna, and causing broadening just above the joint.
6. Injury to the median nerve, causing temporary numbness and tingling in its area of distribution—produced by the sharp edge of the upper fragment.
7. A unique complication in one case, viz., laceration of the tendon of the extensor secundi internodii pollicis, with loss of power of extension of the second phalanx of the thumb.
8. Fracture of the anatomical neck of the humerus on the same side.
9. Dislocation of both bones backwards at the elbow.
10. Fracture may be compound.
11. Fracture of the carpal bones.

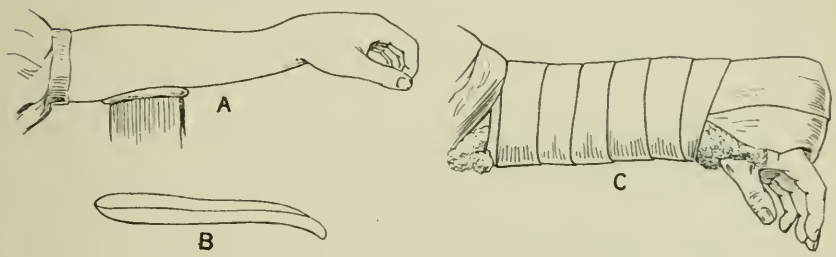


Fig. 28.

TREATMENT.—Reduce the deformity. When the displacement is dorsal, the patient's hand is flexed over the surgeon's knee and the lower fragment driven forwards, while the hand is flexed (*Fig.* 28, A). Anæsthesia is often useful for this manipulation. If there is much impaction, the hand should be hyperextended, hyperflexed, and laterally moved by turns, until the fragments are loose, care being taken to avoid unnecessary damage. To keep the fragments in position, where the displacement is dorsal, he uses an anterior and posterior splint (*Fig.* 28, B); the anterior splint comes down as far as the fracture, but must not impinge on the prominent anterior border of the lower end of the distal fragment; the posterior splint is applied after the manner of Roser, as figured in Helferich, with the exception that the hand is prone instead of supine as in his method. The splint extends to the first row of the phalanges, and is so padded at its anterior end that it causes the hand to be flexed at an angle of about 45 degrees (*Fig.* 28, C).

Where displacement is to the lateral side (*Fig.* 29), he used a lateral splint applied to the ulnar side. The splint is broader above than below, is hollowed out to fit the limb on the ulnar side; the distal end,

which fits the ulnar border of the hand to beyond the middle of the metacarpus, is inclined at a slight angle to the rest of the splint, so that the hand may not be pushed unduly over into the position of abduction. It is fastened to the forearm by adhesive strapping at the upper end; a pad is applied over the radial fragment, and pressure is exerted on

Fig. 29.

Fig. 30.

it by a strap and buckle which passes over the lower portion of the splint, and the latter should be well padded and dusted over with boracic powder (*Fig.* 30). Gordon's splint is very useful and very effective.

Reference.—[1]*Med. Press*, May 31, 1905.

COMA. *Robt. Hutchison, M.D.*

Coma, says M. Fiessinger[1], is met with in (1) Affections of the brain and its membranes; (2) Certain nervous diseases; (3) Some intoxications; (4) Certain infectious maladies. The treatment depends upon the cause.

1. *Traumatic lesions* of the cranium produce coma from compression by an osseous fragment or from hæmorrhage. Surgical treatment in such cases is clearly indicated. If the case is one of cerebral tumour, the patient will be placed on specific treatment in the hope that the neoplasm may be of syphilitic nature. In case of failure, surgical treatment, consisting in trephining and the extirpation of the tumour, especially if a limited paralysis indicates the exact place of the operation, will be adopted. Before, however, having recourse to this operation, **Lumbar Puncture** might be tried, which is an excellent palliative for vomiting and headache; it may also act on the coma when due to an excess of cerebral tension. Not more than 2 or 3 drachms of the liquid should be removed, but the evacuation may be renewed every two days.

Coma with convulsions in a child, or in an habitual drinker, indicates hæmorrhage of the membranes. The treatment is that of ordinary encephalic affections: local or general **Blood Letting, Ice** to head, **Calomel,** mustard to the extremities. Almost the same treatment is used for cerebral hæmorrhage and softening of the brain. The coma in these two affections is difficult to differentiate one from the other.

Embolus produces rapid coma without vertigo or premonitory symptoms. The co-existence of a cardiac or aortic lesion will clear up the diagnosis. **Diffusible Stimulants, Injections of Ether** or **Camphorated Oil,** dry frictions, sinapisms, comprise the treatment.

Thrombosis of the sinus, sometimes preceded by hemiplegia, monoplegia, or Jacksonian epilepsy, may provoke rapid and complete coma.

Thrombosis may be suspected in a patient cachectic from dysentery, cancer, chlorosis, tuberculosis, or who has suffered from otorrhœa. Here treatment is powerless.

Sometimes acute mania terminates by delirium followed by coma. As it is a case of encephalitis with congestion, **Lumbar Puncture** may be tried. Abscess of the brain frequently follows tuberculous osteitis of the petrous portion, and is usually terminated by coma. It is for the practitioner to judge if the patient can support an operation.

The coma of general paralysis succeeds to apoplectiform seizures. It is generally of short duration. **Mercurial Treatment** appears to give some good results. M. Huchard places a **Seton** at the back of the neck as a prophylactic treatment of the complications of general paralysis, as well as in the majority of comatose accidents in other cerebral affections. The seton is left in place from three to six months ; it is not very cleanly, but efficacious.

Insolation is accompanied by coma. Application of **Ice** to the head, **Blood Letting** (12 ounces) and a drastic **Purgative** is the treatment habitually employed.

2. *Nervous Affections.*—Epilepsy is a frequent cause of coma. Active treatment is not necessary ; the coma being rather favourable to the patient by furnishing to the organism the means to recuperate the energy spent on the paroxysm.

Hysteria is accompanied by sleep rather than coma. The limbs are slightly contracted, maintaining sometimes the cataleptic attitude given to them. Children are sometimes seized with coma from a reflex cause. Worms may be suspected in such cases and treated accordingly.

3. *Intoxications.*—Besides the coma produced by such poisons as opium, belladonna, carbonic oxide, and alcohol, there exist others produced by certain maladies—as diabetes, uræmia, dyspepsia, and cancer. The coma of diabetes is observed in the gravest forms of the malady. Sometimes, especially in children, coma is the first sign of diabetes. **Bicarbonate of Soda,** 1 to 3 ounces, in the twenty-four hours has been recommended, but without much result. Preventive treatment is the surest—absolute suppression of meat, large doses of bicarbonate of soda, drastic **Purgatives.** The treatment of uræmic coma is that of coma from œdema of the brain, as observed in Bright's disease.

4. *Fevers.*—Two kinds of coma are observed in infectious maladies—*coma vigil* (typhoid fever) and *profound coma* with immobility and complete insensibility of the patient (eruptive fevers, paludism, acute articular rheumatism). The treatment varies with the nature of the causal affection, but generally speaking, **Warm Baths** (pneumonia, cholera), **Cold Baths** (typhoid fever), subcutaneous injections of **Caffeine, Ether,** or **Camphorated Oil,** prove sufficient. At the same time the patient will absorb cooling drinks in abundance, and if he is strong enough, from six to eight ounces of blood may be taken from the arm.

REFERENCE.—[1]Abstr. in *Med. Press.* Aug. 31, 1904.

CONJUNCTIVITIS. *A. Hugh Thompson, M.D.*

The following remarks of Harman's[1] on *phlyctenular conjunctivitis* throw some fresh light on this disease, which, since it so often spreads to the cornea, is the cause of a great proportion of the impaired vision which exists among the poor. It is, he says, "especially a disease of the poor and ill-nourished, and of children. That malnutrition has more to do with it than dirt, is indicated by the fact that the children of alien immigrants in East London are less liable to it than those of the native poor, while with blepharitis, a dirt disease, the reverse is true. The diet of the poor Jew children is far richer in fatty elements than that of the natives." With regard to the pathology of the disease, the phlyctenules are sub-epithelial collections of round cells about the ending of a nerve and along the perineural lymph channel. The great majority of phlyctenules are found near the corneal margin in either its outer or lower quadrant, and this fact is connected by Harman with the nerve supply of this region from the second division of the fifth, which also supplies the upper teeth, skin of upper lip, and side of nose, from which regions sources of reflex irritation are comparatively seldom lacking.

Spring Catarrh.—In this affection there is a definite hypertrophy of the cutis vera portion of the conjunctiva. Harman[2] looks upon it as analogous to the hypertrophy of the true skin in keloid, caused probably by blocked lymphatics. He attributes the annual recurrence of acute symptoms in the spring to the fact that this season of the year favours all sorts of conjunctivitis, the narrow channels between the hypertrophied papillæ forming a favourable breeding-ground for micro-organisms. The treatment recommended is "copious douching with **Normal Saline Solution** immediately the dry spring winds set in, and manipulation of the upper lid by gentle rolling movements over the everted conjunctiva with a single blade of Knapp's roller forceps."

Membranous Conjunctivitis.—These cases are divided by Harman[3] into two groups: (1) Conjunctivitis necrotica profunda, and (2) Conjunctivitis necrotica superficialis. Cases belonging to the first group are exceedingly rare, and attended by general symptoms of a grave character, and almost invariably associated with the Klebs-Löffler bacillus, and call for the early injection of antitoxin. Cases of the second group are not so rare, and are, as a rule, not attended by general symptoms. In only some of the cases is the Klebs-Löffler bacillus found, and except in those cases where general symptoms are present, can be successfully treated by local applications alone—preferably, nitrate of silver 2 per cent.

In an article on "Operations upon the eyeball in the presence of an infected conjunctival sac," Stedman Bull[4] lays down the following important rules:—

1. "A careful microscopical and bacteriological examination should be made of the contents of the conjunctival sac in every suspected case, carrying the examination as far as the cultivation of the bacteria in a proper medium, and the subsequent inoculation of the germs.

2. If toxic germs are found in great numbers, no matter what their varieties, no operation on the eyeball should be undertaken until the germs have disappeared, and the conjunctival sac has been rendered as sterile as we can hope to make it.

3. If there be suppurative disease of the lacrymal passages, whether of canaliculi, sac, or nasal duct, all operations upon the eyeball are positively contra-indicated. The lacrymal sac must be excised, and the lacrymal puncta must be obliterated by the galvano-cautery, before any operation on the eyeball is undertaken. In the case of a catarrhal dacryocystitis, or of mucocele of the sac, both canaliculi should be incised, and the sac injected daily with an antiseptic astringent solution, and free irrigation through the nasal duct carried out until all secretion has ceased. Even in cases of great urgency, as, for example, acute inflammatory glaucoma, the writer would not feel himself justified in modifying the above statement.

4. If the secretion of the conjunctival sac on examination is found to be infected, but the bacteria are few in number and of slight toxic variety, operations may be done on the eyeball when necessary, but these eyes should be opened and examined twice in the twenty-four hours, and the conjunctival sac gently irrigated with warm normal salt solution, or warm sterilized boracic acid solution, and then the eye should be immediately rebandaged."

A rare disease which has attracted some attention lately is known as *Parinaud's conjunctivitis*[5]. It is infective, but rarely attacks more than one eye. A characteristic feature is the presence of large polypoid granulations hanging from the fornix. The implication of the pre-auricular and other lymphatic glands makes it little liable to be confused with other forms of conjunctivitis except the tubercular, and in its intractability to treatment it resembles it further. After weeks or months, however, it is said to undergo spontaneous cure without leaving scars. Parinaud suggested that the source of infection was foot-and-mouth disease, and Posey remarks that cases have only been reported from France and America, countries in which that disease is especially prevalent. (*See also* EYE, General Therapeutics of).

REFERENCES.—[1]*The Conjunctiva in Health and Disease*; [2]*Ibid*; [3]*Ibid*; [4]*Med. Rec.* Sept. 24, 1904; [5]*Ophth. Rev.* 1904, p. 283, *Amer. Jour Med. Sci.* Feb. 1905, Parsons' *Pathology of the Eye*, vol. i. p. 38.

CONSTIPATION. *Robt. Hutchison, M.D.*

Grace Peckham Murray writes[1] upon that special variety of constipation which is due to abnormal conditions of the rectum in women. Her views may be summarized as follows:—

1. Rectal constipation may be, but is rarely, due to a nervous condition, i.e., nervous rectum. While it may occur as the result of inflammatory conditions, such as hæmorrhoids, fistulæ, and fissures, which are common to men and women alike, in many cases it is occasioned because of the peculiar anatomical construction of the parts, and is mechanical in its origin. Anteversions, retrodisplacements,

neoplasms, especially fibroids, and peri-uterine inflammations obstruct the downward passage of the fæces. Conversely, owing to the close juxtaposition of the rectum and the genital organs of the woman, a loaded rectum in its turn may occasion ovarian and uterine displacements and disorders.

2. A form of rectal constipation which heretofore has received but little recognition, is the result of the pulling down of the recto-vaginal septum, thereby forming a pouch, constantly increasing in size, changing the direction of the intra-abdominal rectal pressure to that of the vaginal, which is at right angles to it, and making it difficult for the rectal sphincters to relax so as to void the contents of the bowel. The result is to render defæcation not only difficult but incomplete. The retention of fæcal matter causes rectal irritation and auto-intoxication. This condition occurs not only in women who have borne children, but in nullipara and the unmarried, although not so frequently.

3. In regard to treatment: **Cathartics** may be useful in those cases in which the obstruction is due to inflamed and displaced organs or neoplasms which prevent the descent of the contents of the bowel, and in which the hardened masses of the fæces press and inflame the genital organs, but would be useless in those cases in which there has been a displacement of the rectovaginal wall. In such cases, glycerin or gluten **Suppositories**, or **Injections** of small amounts of olive oil, glycerin, or soothing fluids, may be employed. The use of daily enemata, as ordinarily practised, is to be reprehended from every point of view. Bougies or dilators may prove beneficial. For constipation of purely rectal origin, massage, electricity, and measures designed to improve peristaltic action are of no avail.

Robinson[2] suggests the use of **Flax-seed** as a laxative in cases of habitual constipation. He orders one teaspoonful to be taken floating in a tumblerful of water every morning before breakfast, and the dose to be repeated in the forenoon.

Mr. W. Arbuthnot Lane[3], in opening a discussion at Chelsea Clinical Society, described the conditions of the viscera consequent on imperfect evacuation of the large bowel. In the large majority of cases such a condition was associated with the symptoms properly comprehended under the term "constipation"; in a small proportion, however, the patient might have a daily evacuation but might still have a loaded large bowel. The sufferer might obtain from the overflow of the loaded large bowel a daily action, which was usually solid but might be fluid, and consequently there might be no complaint of constipation. When children were fed unsuitably, the intestines, and particularly the large bowel, might become distended with gas, rendering the whole of the abdomen abnormally prominent. The cæcum and the ascending colon appeared to suffer most severely, and the transverse colon became distended and elongated in a downward direction as a consequence. Appendicitis was in the first instance directly consequent upon the condition of distension and inflammation of the

cæcum at some period or other, excepting those rare cases where a foreign body was the cause. Appendicitis, therefore, practically never existed except as a consequence of the overloading of the intestinal cesspool, and must of necessity have been associated at some time or other with the results of such distension. The forcing down of the cæcum and transverse colon was much helped by the sedentary position assumed almost universally during defæcation in civilized communities. That the operation of removal of the appendix failed not infrequently to relieve patients of their painful symptoms was well known to all, and no array of statistics pointing to a contrary conclusion to that could be relied upon. It was possible at the time of operation to gauge fairly accurately the amount of success that would follow upon the removal of an appendix, and if necessary upon the division of such bands as might be constricting the lumen of the cæcum and of the ascending colon, or hitching up and obstructing the hepatic flexure. The failure to relieve permanently these patients of their symptoms in a number of so-called cases of appendicitis was forcing itself daily more and more convincingly upon the profession. In certain cases of chronic constipation the patients referred all the pain to the epigastrium or to the umbilical region, and the many symptoms comprised under the term indigestion might be present in an aggravated form. Mr. Lane then explained how the absorption of toxins tended to produce an appearance in the patient of premature senility, and described how the skin became dry, thin, and loose, the secretions acquiring a nasty offensive smell in the flexures. One of the most conspicuous consequences was the loss of fat, and once that commenced it afforded the best indication that the patient was going rapidly down hill. In considering the question of treatment, when it became apparent that something must be done beyond drug and other such treatment, the question resolved itself into whether an attempt should be made to liberate the bowel by the division of bands or adhesions, or whether it would not be better to establish direct continuity between the lower end of the ileum and the termination of the large bowel. In regard to the operative procedure itself, he divided the ileum about six to eight inches from the cæcum, and then connected the proximal end with the sigmoid flexure or rectum. The operation was simple, and the results were excellent provided the case had not been allowed to drift on till adhesions and dilatation of the small intestine had occurred and considerable dilatation of the stomach had taken place. Many had objected to it on the assumption that the patient would afterwards be affected by persistent chronic diarrhœa. Such was not the case, for in a large proportion of the cases the patients had still for some considerable time to take drugs or use glycerin enemata.

Mr. W. H. Goddard described a series of experiments performed upon dogs, which led him to think that should necessity arise "a man could live without a colon." Drugs might be useful in that class of cases of chronic constipation which had not yet led to structural alterations within the abdomen, and into their treatment he did not

purpose to enter ; but however efficacious the medicines they employed he thought the majority of even those cases would sooner or later exhibit pathological changes, and, given pathological structural changes, drugs could avail nothing. Indeed, they were worse than useless, for they delayed the surgical operative measures which in the end must be adopted. Hence, in this class of cases, operative interference was now the only method remaining.

References.—[1]*Med. Rec.* Aug. 6, 1904 ; [2]*Med. Press,* Nov. 23, 1904 ; [3]*Lancet,* Mar. 25, 1905.

CONSTIPATION (Infantile). (*See* Diarrhœa and Constipation, Infantile.)

CONVULSIONS (Infantile). *G. F. Still, M.D.*

The part played by heredity in the causation of infantile convulsions has been variously estimated by different observers. Ashby[1] considers that hereditary disposition is probably the most important factor in this relation, and says that it certainly runs in families in the same way as epilepsy and insanity. He refers to Comby's instance of a woman who suffered with hystero-epilepsy, and who lost five children with convulsions, while a sixth also suffered with convulsions. Neurotic women are specially apt to have infants who suffer with convulsions. Moon[2] also says that amongst the predisposing causes heredity and alcoholic habits in the parents are the most prominent ; and states that in at least half his cases there was a history of epilepsy or insanity or convulsions during childhood in one or both of the parents or grandparents. Cautley[3], however, admitting all this, says that undue prominence is given to heredity. In a great many instances the children of such parentage do not have fits in infancy ; and even where some of, or all the infants have fits it is possible that the same underlying cause is present, and that it is not to be found in the family history, but in the mode of feeding. Every year, he says, he becomes more and more convinced that heredity has extremely little influence *per se* during the first three years of life, and that marked family predisposition is very infrequent in such cases. Similarly he regards the part played by parental alcoholism as being chiefly indirect, not direct by the hereditary influence of alcohol. With alcoholism there are commonly associated evils, such as gastric disturbance in the mother, with harmful changes in her milk, insufficient food, lack of proper clothing and warmth, and an unwholesome environment in general, which, with some neglect of the infant, are quite sufficient causes for convulsions. Rickets, says Ashby, undoubtedly predisposes to convulsions, but perhaps it would be more correct to say that chronic indigestion with the absorption of toxins into the blood gives rise both to the bone changes seen in rickets, and also to the instability of nerve centres which makes the rickety child so liable to convulsions. To rickets also Cautley asserts that undue importance has been attributed in this connection. Rickets is very frequent but comparatively few rachitic children have convulsions,

and when these do occur it is from bad diet, gastro-enteric disturbance, teething, etc.: it is rather by the complications of rickets than from the disease itself. In opposition to these views, Thomson[4] considers that rickets is by far the most important of the predisposing causes, and says that the tendency to convulsions in rickety children rapidly disappears under anti-rachitic treatment, even although obvious sources of peripheral irritation persist. This writer attaches importance to damage of the brain at birth. Should the attack come on within the first fortnight of life this cause is always possible, although it is certain that convulsions from dyspepsia and from other causes quite apart from trauma often begin very soon after birth. Convulsions which begin after the second week are not likely to have anything to do with a birth injury. When the suspicion of birth injury is strengthened by a history of difficult or instrumental labour, and some asphyxia, the prognosis should always be guarded; for although it is probable that many such cases with traumatic cerebral hæmorrhage at birth recover completely, some who seem to get quite well are found in later childhood to have some paralysis or mental defect. The relation of dentition to convulsions has been much disputed. Teething is supposed to cause fits through reflex irritation and secondary cerebral congestion; but Cautley (loc. cit.) says that there is no proof of this. Fever and improper diet are usually the real cause, so that the teething is only indirectly a cause. Were the fits due to any reflex irritation from the gums, lancing of the gums or the eruption of the tooth should cure the fits, but this rarely happens.

Guthrie[5] says that convulsions are far more common in infants below teething age than during or after it, and that they are more prominent in edentulous rickety subjects than in those who are cutting teeth. He regards the nervous "instability" of the teething period as open to doubt, and thinks that the symptoms attributed thereto are commonly to be explained by improper feeding. Ashby quotes one alienist as saying that "dentition when severe and acting on an organism that bears the impress of transmitted weakness of a necessary kind, plays an important part in the production of epilepsy in early life." From this view Ashby himself dissents, and like Guthrie, holds that gastro-intestinal disturbance is the real cause of the convulsions in most of these cases.

Moon (loc. cit.) refers to one case in which not only did the child first have convulsions when cutting his incisors, but they recurred regularly with the succeeding teeth, and also with the second dentition. This last writer disputes the common statement that convulsions commonly occur as a substitute for the rigor of the adult, at the beginning of acute febrile diseases. He did not find convulsions common at the onset of specific fevers, and he quotes Baldwin[6] as having concluded from a study of 130 cases of acute febrile disturbance in children, that convulsions very rarely take the place of rigors even in infants. Thomson (loc. cit.), however, says that generally the place of rigors is taken in young children by convulsions, except in

the case of acute pyelitis, where even in infants rigors are a common symptom.

The effects of convulsions are often disastrous. Thomson states that recurrence of convulsions is often followed by steadily increasing *dementia*, even in cases in which no naked-eye change is afterwards discoverable. The present writer has expressed his belief that the convulsions which so commonly precede the onset of infantile hemiplegia, stand in direct causal relation thereto in many cases, contrary to the present teaching that the convulsions in such cases are nearly always the result of some inflammatory process which also causes the paralysis. Certainly, as Thomson mentions, hemiplegia of a few hours' or days' duration may be caused by infantile convulsions. Ashby (loc. cit.) also mentions cases in which blindness lasting several weeks, or aphasia of short duration, or deafness was left after a severe attack of convulsions. Rarely does death result from convulsions. Ashby mentions cases in which the convulsions are followed by coma in which death occurs. Thomson says that in the few cases in which convulsions prove fatal, laryngismus is usually present. Cautley states that the prognosis becomes worse in proportion to the duration, the degree of asphyxia and general prostration, and the depth of the coma.

TREATMENT.—Cautley recommends that the medical man should take with him to a case of infantile convulsions, chloroform, chloral hydrate solution of known strength, and perhaps, though less necessary, amyl nitrite, solution of morphia, and a hypodermic syringe. A **Hot Bath** at 95–100° F., or a **Mustard Pack** may be used, and **Cold Effusions** should be applied to the head. The bowel should be **Washed Out** with a solution of sodium chloride, a drachm to half a pint of water, or a **Glycerin Enema** may be given. When the bowel is emptied, a **Rectal Injection of Chloral,** gr. iii. to x., according to the age of the infant, should be administered. With this may be given **Potassium Bromide** or **Tincture of Musk,** ℥ x–xx. Cautley, whilst suggesting this tincture, is not satisfied that musk is really of much value. If the chloral is not retained, a hypodermic injection of **Morphia,** gr. $\frac{1}{20}$, for an infant of six months, may be given. Where the convulsions are due to cyanosis, inhalations of **Oxygen** are greatly beneficial. Chloroform inhalations may be given until the chloral begins to act. As soon as the child is able to swallow, a dose of **Calomel** should be given to clear out the bowel and relieve the cerebral congestion.

Thomson recommends, in the convulsions which occur within the first few weeks after birth, getting the infant thoroughly under the influence of **Chloral.** For this purpose he advises for the youngest babies gr. i. every two hours, and for a baby of one or two months gr. i.–ii is not too large a dose. The chloral is to be continued in these doses until the fits have ceased for at least twenty-four to thirty-six hours, and then only gradually diminished in frequency. If the first dose given is not enough, the amount must be cautiously increased

until the baby is almost but not quite too drowsy to swallow; but care must then be exercised in feeding, lest an inhalation pneumonia be set up. In the convulsions of rickets Thomson recommends in addition to anti-rachitic treatment, the use of **Antipyrine**, gr. i. to ii., according to age and size for a few doses.

References.—[1]*Lancet*, Jan. 21, 1905; [2]*Ibid*, *Dec.* 24, 1904; [3]*Clin. Jour.* Sept. 6, 1905; [4]*Pract.* Oct. 1905, p. 510; [5]*Ibid*; [6]*Lancet*, June 13, 1896.

CORNEA (Diseases of) *A. Hugh Thompson, M.D.*

Keratitis Profunda.—Fifty-four cases of this rare disease have been collected by Holmes Spicer[1]. The earliest symptom of the disease is a striation of the cornea caused by the wrinkling of Descemet's membrane. Subsequently an opacity of the cornea, either uniform or formed by the fusion of a number of grey-coloured maculæ, is seen. These spots are distinguishable from those known as "keratitis punctata," but in some cases these also are present. In some cases the posterior surface of the cornea is stained by fluorescin instilled into the conjunctival sac, showing that the endothelium is broken in places, and that the corneal opacities are due to œdema. The average age of the patients is forty, and a large proportion of them are addicted to alcohol, while many of them are prematurely old. The duration of the disease varies from three weeks to twelve months, but as a rule the prognosis is good. The disease is distinguished from ordinary interstitial keratitis by: (1) the age of the patients; (2) the absence of syphilitic history, either congenital or acquired; and (3) the rarity of a simultaneous affection of the two eyes. The essential cause is probably vascular degeneration. The treatment is mainly general and dietetic—abstinence from alcohol, the relief of constipation, and the imbibition of much bland fluid.

Lead Deposit in the Cornea.—In a paper on this subject Schiele[2] recommends a treatment which is analogous to the ordinary drug treatment of internal lead poisoning, namely, a solution of **Potassium Iodide** from 3 to 5 per cent. Its action is increased, he says, by 3 or 5 per cent solution of **Iodic Acid** used immediately afterwards, in order to set free the nascent iodine. In this way he has treated many recent cases with success, but in old cases the insoluble lead carbonate is formed, and in them it would be necessary first to remove the surface layers with a sharp spoon. [In a recent case treated with an ointment containing 3 per cent of potassium iodide, we have seen the vision improve from $\frac{6}{18}$ to $\frac{6}{9}$ in five weeks.]

Hypopyon Ulcer.—Since 1896, when Uhtoff and Axenfeld announced that the pneumococcus is the cause of the typical ulcus serpens, their researches have been abundantly confirmed by other observers[3]. According to Römer[4] the liability to the disease is due to the absence in certain persons of a protective substance normally present in the fluids of the eye which is inimical to the growth of these organisms. To found a treatment on this idea, he has, after elaborate researches, produced a **Pneumococcus Serum**, to be injected subconjunctivally,

which is, he maintains, a specific remedy for the disease. Zeller[4] endorses this claim, though with some modification. On the other hand Zur Nedden[5] found the treatment of no value in 12 out of 14 typical cases. Römer himself, however, has so much faith in his own specific, if employed early in the disease, that, under Government sanction, he has caused the whole of the general practitioners of Lower Franconia to be supplied with it to use in case of emergency. Whatever its value may ultimately prove to be, there is no doubt that the most effective as well as the most rational means of combating infective corneal ulcers is to be found in **Prophylaxis**[6]. The superficial cuts and abrasions of the cornea which are so common in mining and manufacturing districts should always be treated with a view to this possible serious development. Perfect cleanliness and perfect quiet are all that are necessary, and these can best be obtained by flushing the eye with a **Boric Acid Solution,** instilling a drop of **Atropine** solution, and applying a sterile compress bandage. If these simple measures were always adopted there would be very few suppurating corneal ulcers to treat.

(For **Quinine** in corneal ulcer, *see* EYE, General Therapeutics of.)

Traumatic Keratitis of the New-born.—Since the communications of Ernest Thomson and Buchanan[7] to the Ophthalmological Society in 1901 and 1903, some fresh instances of this affection have been noted, both at home and abroad. The same authors[8], in a recently published paper, state that they now have notes of fifteen cases. Most of them occur in the service of the Glasgow Maternity Hospital, "an institution in which, probably, more rickety dwarfs are delivered than in any other hospital in the world." The injury to the cornea results from pressure due either to the obstruction in the maternal passages, or to forceps, or to both combined. The more common form is a diffuse opacity due to simple œdema, which invariably passes off in a few days or weeks. In the less common but more serious cases, the opacity takes a linear form, which is apparently due to the rupture of the posterior elastic lamina, and which is more or less permanent, though it may become almost unnoticeable with the lapse of time. In a case reported by Stephenson[9] a child of twelve showed corneal opacities which were almost certainly due to this cause, while in addition to the opacity a considerable amount of monocular astigmatism was present. This is a subject of which we shall probably hear more before many years have passed.

REFERENCES.—[1]*Lancet,* Aug. 20, 1904, *Brit. Med. Jour.* Nov. 12, 1904; [2]*Treatment,* Aug. 1904; [3]*Scot. Med. and Surg. Jour.* Dec. 1904; [4]*Ophth. Rev,* 1904, p. 311; [5]*Scot. Med. and Surg. Jour.* April, 1905; [6]*Ther. Gaz.* Sept. 15, 1904; [7]*Med. Ann.* 1905, p. 265; [8]*Ophthalm.* June, 1905; [9]*Ibid,* Jan. 1905.

CORNS (Suppurating). *Priestley Leech, M.D., F.R.C.S.*

F. C. Wallis[1] says when suppurating corns involve a joint it is better to **Amputate** the toe and not attempt to save it by draining; the drainage can only be imperfect. Recovery will take a long time, and the ultimate result, ankylosis, will always be a trouble to the

patient. When amputating a joint under these conditions the flaps must not be brought together, and compresses and boracic acid baths should be used until all signs of inflammation have gone.

REFERENCE.—[1] *Clin. Jour.* Dec. 7, 1904.

CORPUS LUTEUM. (*See* OVARY.)

COXA VARA TRAUMATICA. *Priestley Leech, M.D., F.R.C.S.*

It has been well known that fracture of the neck of the femur may produce symptoms closely resembling those of coxa vara. Poland[1] describes three cases of this condition in patients twenty-one, fifteen, and sixteen years of age. The distinctions between the two are: the history of injury (sometimes this is very slight); the general condition of the patient; in the traumatic form the patients are often muscular and well developed; in both, locomotion is more or less seriously impaired, in coxa vara this comes on gradually; shortening, eversion, and abduction are present in both, and also a lessened range of rotation in the joint; pain on forcible movement existed in all Poland's three cases; passive flexion of the femur upon the pelvis in the traumatic cases is quite impossible, and contrasts with the flexion permitted in true coxa vara, and with the inseparably flexed position of the joint in hip disease. In traumatic coxa vara there are pains over the neck of the bone; thickening over the neck of the femur; and in severe cases displacement of the neck. With regard to treatment, Poland was obliged to excise the head of the femur in his three cases.

REFERENCE.—[1] *Polycl.* July, 1904.

CRAW-CRAW. (*See* SKIN DISEASES, TROPICAL.)

CYSTS (in the Neck). *Priestley Leech, M.D., F.R.C.S.*

Edington, of Glasgow[1], in a paper on cysts occurring in the median line of the front of the neck, classifies them into:—

1. Thyreoglossal; (*a*) Infrahyoid; (*b*) Suprahyoid
2. Ranula
3. Dermoid
4. Sebaceous

In addition, sometimes one may encounter a sac of pus due to suppuration of a lymphatic gland. Notes on cases of each kind are given, and micro-photographs of sections of the various parts.

REFERENCE.—[1] *Brit. Med. Jour.* Oct. 1, 1904.

DELIVERY. (*See* LABOUR.)

DERMATITIS. *Norman Walker, M.D.*

Galensky[1] has recorded 5 cases of this condition following the use of 4 to 10 per cent formalin solutions, of which three sufferers were physicians, one an attendant in a pathological laboratory, and one a chemist. Generally the effects were not visible until after the use of formalin for from six to nine months, and the first sign was a brown

discolouration of the nails. Later the matrix became swollen, and the nail itself very soft, brittle, and frayed at the edges. The condition was accompanied by great pain, even in the cases of the two who only had the nails affected, the others showing the effects of the irritation in the fingers and hands. Treatment, which was palliative, was evidently not very successful, as the eruption continued for from nine to eighteen months. Metol, which has long been known as a skin irritant, seems in a case mentioned by Storrs[2] to have had a very violent effect. The patient, a man debilitated by gout and influenza, had on a former occasion suffered from the irritation slightly on the hands, but the last attack, occurring nine days after the use of metol, produced grave symptoms. The eruption spread rapidly over the whole body, and in addition to the severe itching the temperature rose to 101°, and there was inflammation of the throat.

An interesting case mentioned by Morrel[3] is that of a young woman who, when heated at a ball, inserted her pink-painted programme in the bosom of her dress next the skin. Twenty-four hours later an eruption broke out in that region and persisted for a few days. The colouring matter on the programme having been examined chemically was found to contain eosin, evidently the cause.

Jones[4] gives a further example of the effects of satin-wood, which caused an outbreak amongst the joiners and cabinet-makers in a ship-building yard.

Hoffmann[5] gives particulars of the inflammation of the skin caused by primula obconica, chrysanthemum indicum, thuja occidentalis (arbor vitæ), and sulla maritima, and mentions that fresh squill root is used in Greece as a counter-irritant and vesicant.

References.—[1]*Munch. Med. Woch.* January 24, 1905; [2]*Brit. Med. Jour.* Dec. 31, 1904; [3]*Le Progrès Méd.* Mar. 4, 1905; [4]*Brit. Med. Jour.* June 25, 1904; [5]*Munch. Med. Woch.* Nov. 1, 1904.

DERMATO-MYOSITIS. *Robt. Hutchison, M.D.*

This disease, of which Murrell records a probable example[1], is rare in this country, but several cases have been recorded in Germany, and it is said to be common in Japan. It was not known as a clinical entity until 1887— when P. Hepp[2], E. Wagner[3], and Unverricht[4] each independently described an unknown disease so closely resembling trichiniasis in its features that it was called by the first-named "pseudo-trichiniasis," a form of nomenclature utterly indefensible. In 1891 Unverricht[5] published his second case, and suggested the term dermato-myositis. Prior to Unverricht's first publication, Wagner[6] in 1863 had described "A Case of Rare Muscular Disease," and in 1875 Potain[7] had recorded a somewhat similar case, but regarded it as a chronic morvian disease, a kind of bastard glanders, with anomalous symptoms. In 1897 Kürt von Bultzingslöwen, of Breslau[8], published a thesis on dermato-myositis. The first case in France, with the exception of Potain's, occurred in the clinique of Prof. R. Lépine, of the Hotel-Dieu at Lyons, and was reported by L. M. Bonnet[9]. In 1903 F. Frochheimer, of Cincinnati[10], published a detailed account of a typical

case in a woman, aged forty. Last year John Hill Abram[11], of the Liverpool Royal Infirmary, published two cases of infective myositis, one of which was clearly septic in origin, and proved fatal.

The symptoms of dermato-myositis are fairly constant and characteristic. The onset is gradual, and little or nothing is known as to its causation. The fever is continuous, except in the septic cases, and never attains a high degree of intensity. There is always pain and tenderness of the muscles, with usually a considerable amount of œdema. The muscles may be attacked simultaneously or successively. When the muscles of the pharynx and larynx are involved death usually ensues from aspiration pneumonia. The spleen in most cases is enlarged. There is usually profuse sweating, and there may be eruptions of various kinds, especially erythema, urticaria, and herpes. It is not essential to the diagnosis that all these symptoms should be present, and in one of Unverricht's cases there was no fever, no sweating, no enlargement of the spleen, and no rash. The duration of the disease is variable. It may run an acute course in from one to eight weeks, or it may become chronic, lasting a year or more. In one case convalescence was greatly prolonged, and the patient had not fully recovered at the expiration of two years. The prognosis is by no means good, and in 15 cases there were 11 deaths, of which 6 were from secondary pneumonia.

There are many other forms of polymyositis. The myositis due to traumatism or operative measures falls within the province of the surgeon. Enteric myositis, a waxy or granular degeneration of the striated fibres, is not uncommon, but the symptoms are slight and the pain and tenderness on pressure are never pronounced. It has been seen in cases of scleroderma. Gonorrhœal myositis, affecting chiefly the muscles of the neck, is not unknown. Suppurative myositis is usually due to streptococcus infection, and is best treated with **Serum.** In some cases there are various forms of hæmorrhage, and in others the disease is associated with erythema nodosum. The chronic form may be the precursor of myositis ossificans.

Benson[12] also describes in detail an interesting example of this disease, which ultimately proved fatal. His experience of treatment was, that no drug relieved in any way; thyroid extract was tried amongst the others. Electrical treatment was also useless. The only thing that relieved in any way was constant and gentle **Physical Movements,** careful regulation of the diet, restriction of the intake of fluids, and occasionally some such drug as **Phenazone,** given with large doses of **Alkalies,** e.g., 20 or 30 grains of bicarbonate of soda.

References.—[1]*Med. Press,* Mar. 1, 1905; [2]*Berl. klin. Woch.* 1887, p. 389; [3]*Deut. Arch. f. klin. Med.* xl. 1887, p. 241; [4]*Zeits f. klin. Med.* xii, 1887, [5]*Deut. Med. Woch.* 1891, 2; [6]*Arch. f. Heilk.* iv, 1863; [7]*Bull. Soc. Med. des Hop. de Paris,* 1875, p. 314; [8]*Buchdruck. von G. Schade*: [9]*Lyon Méd.* 1901, xcvii, 10; [10]*Boston Med. and Surg. Jour.* 1903, cxlviii, 631; [11]*Lancet,* Nov. 12, 1904; [12]*Clin. Jour.* Aug. 31, 1904.

DHOBIE ITCH. (*See* Skin Diseases, Tropical.)

DIABETES. *Prof. J. Rose Bradford, D.Sc., M.D.*

Although the general principles of the dietetic treatment of diabetes are well recognized, there are still some points about which there is considerable difference of opinion, and more especially perhaps in regard to the question as to the degree of restriction advisable in cases of severe diabetes.

It is generally recognized that most of the symptoms of diabetes are due to the presence of sugar in the blood, and many of the complications of the malady may very probably be traced directly to the irritating effects of sugar on the tissues.

Hutchison[1] considers that the neuritis, the perforating ulcer, carbuncle and retinitis may be all correlated directly with the presence of excessive quantities of sugar in the blood. Further, as he points out, it is very desirable that treatment should be directed to removing sugar as far as possible from the blood, since in this malady the function of assimilation of sugar is greatly impaired. The impairment of function is improved by rest and aggravated by over-stimulation. Thus, if the blood is more or less freed from sugar rest is attained, whilst on the other hand if much sugar be present they are over-stimulated. It is probable that some such explanation as this is at the root of the well-known phenomenon, that a diabetic who is unable to assimilate sugar at all is after a period of strict dieting able to assimilate considerable quantities. It is well known that strict diet will not only cause disappearance of sugar from the urine, but that as a result of the dieting a patient may subsequently be able to take several ounces of bread daily without any reappearance of sugar in the urine. Hutchison considers that one of the fundamental distinctions between diabetes and glycosuria lies in the fact that the former is a permanent glycosuria.

Diabetes and glycosuria are both of them very often treated by advising the patient to abstain absolutely from all foods containing carbohydrates. Such a method of treatment is not really suitable, since there are great individual variations in different cases of diabetes with reference to the power of assimilation of sugar.

After having determined the presence of sugar in the urine and the quantity excreted in the twenty-four hours, it is advisable to ascertain what has been called the patient's tolerance for carbohydrates. This may be done by giving a known amount of animal food together with a known quantity of carbohydrate food, such as bread, and Hutchison recommends that some 4 ounces of bread should be given. The patient is put on such a diet for three days, and the total output of sugar in twenty-four hours is determined and compared with the amount of carbohydrate in the bread. If less sugar is excreted than can be accounted for by the amount of carbohydrate in the bread, there must be some tolerance and the case may be regarded as a mild one. On the other hand, if more sugar be found in the urine than can be accounted for by the carbohydrate in the food, the case is of severe type. Hutchison recommends that in the mild cases the diet should

be so adjusted as to contain a quantity of carbohydrate that is insufficient to cause the appearance of sugar in the urine, and that such a diet should be continued so long as the patient's weight and condition remain satisfactory. Further, it is probably of advantage that such a patient should be put on an absolutely rigid diet from time to time, in order to rest the assimilating functions of his tissues.

If the case is of a severe type and more sugar is excreted than can be accounted for by the carbohydrates ingested, the difficulties in the treatment are greater. The urine should be tested with perchloride of iron for the presence of diacetic acid and its allies. Many authorities consider that in this form of disease it is not advisable to change the diet suddenly, as in such circumstances some risk of coma is present, and it is better to diminish the carbohydrates slowly. By slow degrees the diet can be reduced to one of pure proteid and fat, and many think that it is desirable to prescribe considerable quantities of bicarbonate of soda in addition. In many cases, even on a very rigid diet, the quantities of sugar excreted in the urine undergo but little diminution, and the general condition of the patient may become obviously worse. This deterioration may also show itself by progressive loss of weight, and in this type of case it is probable that persistence in a rigid diet is harmful, and that it will be better to allow a small quantity of carbohydrate in the form of bread.

Where the perchloride reaction is negative a rigid diet is better tolerated and is more beneficial; even in these cases it is probably advisable to diminish the diet gradually.

Hutchison considers that fatty foods are very useful to the diabetic, that they never do harm, and that fatty foods never in any way increase the output of sugar.

Milk is useful in some cases, harmful in others, and its value can only be determined by experiment in any given case. A sugar-free milk can be obtained for use in cases where a rigid diet is necessary.

The great difficulty undoubtedly arises in providing a substitute for bread, and bread made from casoid meal is superior to gluten bread, as the latter is not only unpalatable but often contains considerable quantities of starch.

The use of potatoes in diabetes has led to great controversy. They contain far less carbohydrate material than bread, and thus weight for weight the potato is much less harmful, and their use may be allowed in small quantity where it is not followed by an increase in the glycosuria.

Most green vegetables are harmless, but fresh fruits must be used with caution, and nuts are valuable on account of their richness in fat.

Hutchison is of opinion that alcohol is permissible as a beverage, and that it has the additional advantage of aiding the digestion of fat.

In cases where coma is imminent, a highly nitrogenous diet is not advisable, as it would seem that the proteids may be a source of the acid products which are regarded as the cause of the coma.

Skim milk has been recommended as the most suitable diet under

these circumstances, and stimulants may be freely used according to Hutchison, since "the combustion of alcohol in the tissues appears to lessen the destruction of proteids which are the source of the acid poisons that produce the coma."

In the diabetes of the elderly, absolute strictness of diet is perhaps not so necessary; but the diet should be carefully regulated according to the sugar contents of the urine, and the effects of restriction of this. It is probable that alcohol is harmful in these cases, and it is not uncommon for the disease to have been brought about by the ingestion of excessive quantities of alcohol.

Fats are of great value in the dietetic treatment of diabetes, as owing to the cutting off of the carbohydrate there is a great diminution in the heat-producing constituents of the food, and the place of the carbohydrates for this purpose is best taken by fats.

There has been rather a tendency to increase unduly the amount of proteid matter in the food of diabetics owing to their large appetite. It is far better for this to be satisfied only in part by proteids and to a considerable extent by fats. Futcher[2] draws attention to the value of fats, and also to the necessity of giving to some diabetics a moderate amount of carbohydrate, although they may be still excreting fair quantities of sugar. The indication as to whether a small amount of carbohydrate should be given or not is the state of the body weight. If the patient loses weight on a rigid diet, it is probably advantageous to introduce a small quantity of carbohydrate, notwithstanding the slight increase in the glycosuria so produced. Futcher confirms Mosse's statement with reference to the value of potatoes in the treatment of some cases; potatoes contain from 16 to 24 per cent of starch, whereas bread contains some 55 per cent. Thus corresponding amounts of potato and bread produce very different results as regards increase in glycosuria. Futcher is of opinion that some of the other symptoms of diabetes, such as thirst, neuralgia, etc., may also improve or subside under the influence of a diet containing potato starch; and further, that a certain degree of tolerance for carbohydrates was not uncommonly produced by the potato régime. He concludes that potato starch is more easily assimilated than bread starch, and that decided benefit may be obtained from their administration. He recommends that they should be baked. Futcher agrees that the production of the ferric chloride reaction with the urine is always a danger signal, and points to the imminence of acid intoxication. Beta-oxybutyric acid is held by most observers to be derived from the breaking down of the tissue proteids, but it is also possible that it may be derived from fats, and the appearance of the Burgundy-red reaction of diacetic acid in the urine should be an indication for the diminution of the diet and for the alkaline treatment to be started. Large quantities of bicarbonate of sodium should be given both by the mouth and by the rectum, to an extent sufficient to cause the urine to be alkaline in reaction. In cases of coma some temporary recovery of consciousness may be obtained by the intra-

venous injection of a 1 per cent solution of sodium bicarbonate in normal salt solution. The fluid must be allowed to run into the vein very slowly. Once the symptoms of diabetic coma however are established, it is difficult by any treatment to procure more than a temporary improvement.

Arany[3] points out that the treatment of diabetes in England and France is however different; whereas **Opium** is largely used by the first, **Antipyrine** is largely employed by the French, who also do not apparently restrict the diet to the same extent as is customary with us. Opium is probably beneficial in the early stages of the disease, and may perhaps hinder its progress; but certainly a great deal of the apparent improvement is dependent purely on the relief of symptoms, as, for instance, thirst. Antipyrine is held to produce its effects by its action on the nervous system, and it has not any direct action upon the elimination of sugar. Further, the long-continued administration of antipyrine is apt to produce heart symptoms. In Germany and Austria, according to Arany, the disease is more often treated on balneo-therapeutic lines, and especially by the administration of **Alkaline Waters** and **Alkaline** and **Saline Waters.** The springs of Carlsbad have a considerable reputation in the treatment of diabetes, and, according to Arany, relieve and in some cases cure the patient when ordinary alkaline drugs produce little or no effect. It is of course quite possible that the administration of waters fresh from a spring may produce quite different results to those obtained even by the administration of the respective constituents. Further, the degree of concentration of the constituents of the saline spring may have a very potent influence on its therapeutic action. The Carlsbad treatment is usually carried out by placing a patient on a diet almost free from carbohydrate, and from 2 to 3 tumblerfuls of the water are taken daily. It is said that on the fourth or fifth day of the treatment the thirst and the polyuria diminish, and that in many cases in the course of the second week the urine becomes free from sugar. At this period a small amount of carbohydrate may be given to test the assimilating power of the patient, and the quantity of carbohydrate so given must be checked by observations on the urine and on the body weight. Treatment is carried out for four or five weeks: the patient is advised to live all the year round on a diet containing carbohydrate in insufficient amount to lead to glycosuria. These beneficial results are obtained rather in the cases of glycosuria than in those of established diabetes. In the more severe type of the malady, where in addition to glycosuria, diacetic acid, acetone, etc., are present, a more generous diet is at first necessary, and the carbohydrates must be reduced gradually and larger quantities of the Carlsbad waters taken. In many cases an improvement ensues which is shown first of all by a disappearance of the acetone and diacetic acid, but the diminution in the sugar requires a much longer time, and such patients often do better with a small amount of carbohydrate in the food, as total restriction of carbohydrate is sometimes followed

by a reappearance of diacetic acid and acetone. Hot mineral baths are useful also in these cases, as tending to keep the skin in a more healthy condition.

REFERENCES.—[1]*Pract.*, June, 1904; [2]*Maryland Med. Jour.*, Oct., 1904; [3]*Med. Press and Circ.*, March, 1905.

DIARRHŒA AND CONSTIPATION (Infantile). *G. F. Still, M.D.*

Diarrhœa.—The most important progress in recent years with reference to infantile diarrhœa has been in the study of its bacteriology. The report of the Rockefeller Institute upon the gastro-intestinal or diarrhœal diseases of infancy, shows that the Shiga bacillus, or one of the varieties of the bacillus dysenteriæ, occurs in a large proportion of cases of diarrhœa in infancy. The presence of bloody mucus or much mucus in the stools, where such an obvious cause as intussusception or extreme purgation can be excluded, indicates infection with the dysentery bacillus. Sometimes symptoms comparable to those of adult dysentery are present, and then the disease has a high mortality, but often the bacillus is found where the intestinal disturbance is hardly more than belongs to intestinal indigestion, and infection may occur merely as an epiphenomenon in measles, pneumonia, etc., or as a terminal coincidence in extreme marasmus. It would seem that any sort of intestinal disturbance associated with diarrhœa may show this particular bacillus, excepting only the extremely severe form of diarrhœa which is known as "cholera infantum." In thirty-two normal infants the stools did not yield the bacillus dysenteriæ The bacillus could not be traced to any particular source of infection; it seems to infect infants in any large city, so far as observations in America apply, and was found in the stools of the breast-fed as well as the artificially fed It has been shown that the dysentery infection is contagious, but how, and to what degree, is unknown. In four instances small ward epidemics were observed.

Probably it will be wise to reserve judgment as to the relation of the bacillus to the diarrhœa until further observations have been made on normal infants, for Dunn[2] states that the bacillus dysenteriæ can often be found in the intestine in cases where it probably has no causal relation with the pathological process found.

Dunn would classify the diarrhœa of infancy on clinical grounds as (1) Acute nervous diarrhœa, characterized by loose stools of normal colour and odour, without abnormal constituents; (2) Irritative diarrhœa, characterized by absence of persistent fever, and presence of curds and undigested masses in the discharges; (3) Fermental diarrhœa, with absence of fever, and presence of green colour and foul or sour odour in the stools; (4) Infectious diarrhœa, with persistent fever, blood and excess of mucus in the stools. In these cases the bacillus dysenteriæ, but probably in some cases other micro-organisms, may be the exciting cause; (5) Cholera infantum. The predisposing effect of hot weather is acknowledged by Dunn, and also by the investigators at the Rockefeller Institute, but Dunn points out,

as other writers have done, that "summer diarrhœa" in infants differs in no way clinically or anatomically from diarrhœa occurring at any other time of the year.

Prophylaxis.—Holt[3], referring to the proved contagiousness of the dysenteric infection in infants, says that most probably infection occurs from the fæces, and therefore the stools should be disinfected, and great care should be taken to prevent contamination of food or water by persons handling the child's napkins. In Institutions it is a good rule that the person in charge of the children's napkins should not at the same time have anything to do with the food or the feeding.

Ostheimer[4], regarding summer diarrhœa in infants as due primarily to two causes, unclean food and heat, recommends that in summer infants should be bathed frequently and excessive clothing guarded against. They should be kept in the open air in the shade as much as possible. Flies should be kept away. Soiled napkins should be removed at once. Care must be taken that bottles and teats are kept clean.

Treatment.—Of prime importance in the treatment of infantile diarrhœa is the feeding. Lowenburg[5] recommends feeding with **Sterilized Water** only for twenty-four to forty-eight hours at the beginning of treatment. In some cases **Barley Water** or **Rice Water** may be used instead. **Albumin Water** is not always tolerated, but if it causes no untoward symptoms it may be used in place of sterilized water, and an infant can subsist on this for many days, especially when a small quantity of expressed beef juice is added to it. If there is much vomiting, nutrient enemata may be substituted for the oral feeding for twenty-four to forty-eight hours.

Helprin[6] advises that the albumin water should be made thus: The white of 1 egg to be mixed with 8 ounces of sterile water, 5 grams of sodium chloride, and a little brandy or whisky to be added. In place of barley-water he suggests the following: 2 tablespoonfuls of ordinary flour in an agate dish retained in an oven till the flour is well browned, then mix in a little cold water; add this to 2 pints of water, with constant stirring. This may be given alone at first, and after a day or two a very small quantity of condensed milk can be cautiously added.

Kerby[7] recommends the addition of beef-, mutton-, or chicken-broth to barley-water, in the proportion of 1 to 5, but cautions against too much broth as it may increase the diarrhœa. He advises avoiding brandy and whiskey lest they irritate the stomach and kidneys. Leschziner[8] has found **Butter-milk** of much value both in acute and in chronic diarrhœa.

Teissier[9] reports excellent results from the use of **Pegnin**, a curdling ferment which is added to milk after it has been boiled and cooled down to about 100° F., and produces a fine curd in it on shaking. This is said not to alter the taste of the milk, but to render it so easy of digestion that it can be taken even in cholera infantum.

The value of irrigation of the colon is emphasized by Kerby (loc. cit.);

in cases with green mucus with or without blood the bowel should be irrigated every eight hours. If no blood, with ordinary saline solution, if blood, with a 1 per cent tannic acid solution. If the temperature of the infant is high, the water should be injected at 60 to 70° F. If the infant be exhausted or the temperature subnormal, the fluid should be at 110° F. He gives at the outset **Calomel** gr. $\frac{1}{20}$ to $\frac{1}{10}$ every half hour until 1 or 2 gr. have been taken if there is vomiting; otherwise, castor oil. Then **Bismuth Subnitrate**, gr. 10, whatever the age of the infant may be, is to be given every two hours, and if this fails to turn the stool black, he adds **Sulphur**, 1 gr. to every dose of the bismuth. Kinner[10] has used **Colloidal Oxide of Bismuth**, which is tasteless, readily soluble in water, and contains 20 per cent of metallic bismuth. It is given three or four times a day in doses of 5 cc. of a 10 per cent solution. Rapid improvement followed its use. Lowenburg (loc. cit.) recommends the **Salicylate of Bismuth** or the **Subgallate of Bismuth** in large doses (gr. v to gr xv). The former is most useful in the fermental type of diarrhœa, the latter in the inflammatory. He also mentions **Salol** (gr. iii to v), and **Zinc Sulphocarbolate** (gr. $\frac{1}{6}$ to $\frac{1}{2}$) as useful, and says that in cases with much pyrexia the administration of **Acid. Hydrochlor. Dil.** (℥v to x) after each meal is beneficial.

Helprin (loc. cit.) recommends the following mixture:—

℞	Bismuthi subnitratis	℥v	Syrupi rhei aromatici	℥iii
	Bismuthi salicylatis	gr. xii	Aquam	ad ℥iv

℥i every two hours.

Lowenburg considers that if opium is required, as it may be for pain and tenesmus, it is best given hypodermically as **Morphine**, gr. $\frac{1}{800}$ with atropine gr. $\frac{1}{3000}$, for "a child under two years of age." **Atropine** given alone has, he says, a remarkable effect in cases with watery stools, pinched features, a high temperature, and cold clammy surface. It should be given in one dose of $\frac{1}{250}$th of a grain; it seems to act as a stimulant.

The most recent addition to the therapeutics of infantile diarrhœa is the **Serum Treatment**, with serum prepared in the usual way from various types of dysentery bacillus. Holt (loc. cit.) says that of 83 cases in which this serum was used, 38 were fatal. No unfavourable symptoms except the occurrence of a rash, usually urticarial, resulted from its use; only 12 cases showed any noteworthy improvement apparently following its administration. It was used, as a rule, only in the most severe cases and late in the disease. Moreover the dose had to be determined by experience, and at first too small doses were given, so that Holt considers further trial necessary before its value can be estimated. He says that the favourable cases for its use are the sharp acute attacks with symptoms of severe infection occurring in infants or older children with some powers of resistance, that is, where the real problem is to combat infection, not to maintain the nutrition of the child, as it so often is in prolonged cases of diarrhœa or in marasmic infants with diarrhœa supervening. On the whole the results of serum treatment, according to Holt, have been disappointing so far.

Vomiting is a common accompaniment of diarrhœa in infancy, but it is not infrequent as a chronic condition associated rather with constipation. Holt[10] records cases in which habitual vomiting seemed to result from feeding with too high a percentage of fat, e.g., in an infant ten months old who was having a milk mixture containing 5·3 per cent of fat, vomiting had persisted many months, and a serious gastric catarrh, shown by the large amount of mucus in the vomit, had resulted. In another case constipation and habitual vomiting resulted from a milk mixture containing about 7 per cent of fat. The present writer[11] has emphasized the necessity for distinguishing carefully between the vomiting due to simple gastric catarrh and that due to pyloric obstruction from pyloric hypertrophy. Careful examination should be made for hypertrophy of the pylorus in all cases where chronic constipation is associated with persistent vomiting in an infant under the age of four months. Mere persistency of vomiting is not evidence of such pyloric obstruction: it is only when the two characteristic signs, visible peristalsis of the stomach and the palpable thickening of the pylorus, are present that it becomes diagnostic. The chief characteristics of the vomiting in this condition are: (1) Its forcible character: it is often shot through the nostrils as well as the mouth; (2) Its occurrence in an infant who has been carefully fed, and often with breast-milk only; (3) Its persistence in spite of such alterations of feeding and general treatment as will usually control the vomiting of dyspeptic conditions; (4) Its large amount, showing that the vomit represents more than one feed. The vomiting in these cases is, contrary to what might be expected, often distinctly influenced by diet temporarily, but usually after a few days becomes as bad as ever.

In older children attacks of vomiting lasting a few days and recurring at intervals of weeks or months are now described under the name *Recurrent or Cyclic Vomiting*. Most of these cases, according to Rachford[12], are constipated, and after a few hours of prodromal symptoms, amongst which are flushings of the cheeks, general restlessness, sallowness, dark rings under the eyes, and the peculiar acetone odour of the breath, the child begins to vomit, and often vomits severely, not only all food, but even bile and mucus, for a period varying from one to six days. Meantime thirst is generally very marked, and the temperature ranges from 101° to 105°. There is usually no pain in the abdomen. The attacks have only very rarely proved fatal. Recently much attention has been devoted to the urine in these cases, which shows acetone and diacetic acid, so that it is suggested that the vomiting is the result of an acetonæmia, an acid intoxication, a view which, even if it be incorrect, as seems probable, has given rise to a method of treatment which promises to be more successful than any previously known, for such cases were notoriously intractable.

TREATMENT.—To deal with this last group first, Edsall suggested that free administration of **Sodium Bicarbonate** would counteract the acid intoxication, and experience has shown that given, for instance,

in doses of 10 grains every hour, it may abort or relieve the attack. Rachford (loc. cit.) recommends calomel gr. $\frac{1}{4}$, sod. bicarb. gr. v. every half hour until 2 grams of calomel have been taken, and if the stomach be not too irritable the calomel should be followed in two or three hours by a saline laxative, and four or five hours later by **Benzoate of Soda**, gr. iii to viii; every two to three hours dissolved in essence of papain and peppermint water. Only water should be given as food until the patient ceases to vomit even water. **Rectal Injections** of sodium bicarbonate, a tablespoonful to the pint, may also be given every eight hours. In very severe cases hypodermic injections of morphia, gr. $\frac{1}{20}$ to $\frac{1}{10}$, seem to have some influence in controlling the vomiting. **Saline Infusions** under the skin may also be necessary where the prostration is extreme. In the intervals between the attacks the child must be shielded from all mental strain and excitement, for they are usually very nervous children. School is to be forbidden. The constipation must be overcome by drugs, massage, or otherwise.

In the commoner cases of gastro-enteritis where diarrhœa is associated with much vomiting, as it so often is in infancy, Sutherland[13] recommends that the stomach should be washed out with a weak solution of Condy's fluid or of bicarbonate of soda; hot fomentations should also be applied to the abdomen for three or four hours. Rectal feeding is often useless in such cases, for the bowel is not in a condition to absorb anything. The following mixture may be given by the mouth:—

R	Sod. sulphocarbol.	gr. ii	Glycerin	℥x
	Bismuth subnitrat.	gr. ii	Aq. destill.	ad ℥i
	Tragacanth	gr. $\frac{1}{2}$		

To be taken every six hours.

Water should be given freely by the mouth to help in washing out the stomach.

In all cases of chronic vomiting in infancy the diet must be carefully investigated. Holt (loc. cit.), insisting on the harm done by excess of fat, states that he has never seen any advantage, but often much harm, from raising the fat above 4 per cent; and where any gastro-intestinal disturbance has already arisen the fat should be reduced much below the normal 3 to 4 per cent.

In the cases of vomiting dependent upon hypertrophy in the pylorus, the present writer (loc. cit.) has advocated the trial of non-operative measures, for cases have been recorded in which careful feeding alone has resulted in recovery, and others in which nasal feeding or stomach washing has succeeded. Thomson[14], reviewing this subject, mentions that Heubner has had good results in some cases from the oral administration of **Opium** in small doses. Numerous cases have been reported by the present writer and others, of recovery after operation, either pyloroplasty, gastro-enterostomy, or stretching of the pylorus, but the tendency of recent experience is towards non-operative measures.

Constipation.—This may be a prominent symptom in the pyloric hypertrophy mentioned above. Holt (loc. cit.) describes cases in which

chronic constipation resulted from the use of too high a fat percentage in the milk-mixtures given to infants. Baumann[15] describes a case in which constipation with vomiting simulated meningitis, a by no means uncommon occurrence. Blaikie[16] describes constipation as one of the symptoms of intestinal dyspepsia in children. He thinks that constipation is an exciting cause of night terrors. Constipation is a usual accompaniment of the attacks of recurrent vomiting mentioned above, and according to Rachford is very obstinate. Guthrie[17] mentions constipation as one of the factors which may render dentition painful in an infant; the gums are apt to be swollen and tender when there is gastro-intestinal disturbance of any sort.

The value of **Purgen** has been insisted upon by Gundrum[18]. He says it produces very little griping, the evacuations are soft and diffluent, the tablets in which it is given are palatable and readily taken by children. The tablets must, however, be dissolved either in milk or water or in the mouth before being swallowed, otherwise they are inert.

In the cases of recurrent vomiting in the intervals between the attacks, Rachford recommends, for the chronic constipation, a mixture of **Sulphate of Soda** and **Phosphate of Soda** at first, and later mixtures of **Rhubarb** and **Cascara Sagrada:** he also recommends **Abdominal Massage.** Grunbaüm[19] prescribes as an aperient mixture for an infant three months old: Extract of jalap gr. $\frac{1}{16}$, syrup sennæ ℥iii, spirit of chloroform ℥i, tincture of ginger ℥i, syrup ℥x, caraway water to ℥i, or a cascara mixture with liquid extract of **Stillingia,** 1 minim of the liquid extract of cascara with 5 minims of the stillingia.

REFERENCES.—[1]*Report Rockefeller Inst.* 1904; [2]*Arch. Ped.* June, 1905; [3]*Rockefeller Report,* p. 189; [4]*Arch. Ped.* Aug. 1905, p. 612; [5]*Ther. Gaz.* Aug. 15, 1904; [6]*Med. Rec.* July 23, 1904; [7]*Pediatr.* Aug. 1905, p. 529; [8]*Arch. f. Kinderh.* 1904; [9]*Ann. Méd. et Chir. Inf.* Mar. 15, 1905, p. 215; [10]*Arch. Ped.* Jan. 1905, p. 6; [11]*Lancet,* March 11, 1905; [12]*Arch. Ped.* Dec. 1904; [13]*Pract.* Oct. 1905, p. 507; [14]*Scot. Med. and Surg. Jour.* Nov. 1905; [15]*Brit. Jour. Chil. Dis.* Feb. 1905; [16]*Pediatr.* Jan. 1905; [17]*Pract.* Oct. 1905; [18]*Wien. klin. Runds.* 1904, p. 650; [19]*Pract.* Oct. 1905.

DIARRHŒA (Hill). *J. W. W. Stephens, M.D.*

Duncan[1] gives a *résumé* of the symptoms of this affection: (1) Purging commences at 3 to 5 a.m., and 1 to 6 motions are passed up to 11 a.m., when the purging stops; (2) The motion is compared to recently stirred whitewash; (3) After a time liquid stools appear in the evening; (4) Flatulence is a troublesome symptom.

ETIOLOGY.—The author favours the view that mica in drinking water is the cause of the disease. (The use of the platinum needle and tube of agar would probably give the explanation of the disease.)

TREATMENT.—In mild cases 12 to 15 grs. of **Pepsin, Ingluvin,** or **Lactopeptin** are given two hours after food (milk). In severe cases 5 oz. of peptonized milk every two hours day and night, and also drachm doses of **Liquor Hydrargyri Perchloridi** fifteen minutes after a meal.

REFERENCE.—[1]*Brit. Med. Jour.* p. 1283, 1905.

DIPHTHERIA.

E. W. Goodall, M.D.

Etiology.—C. J. Thomas[1] made an instructive investigation into diphtheria in connection with London schools. The enquiry was carried on during the last two years of the existence of the late London School Board. Thomas found that of the cases in London during the period of enquiry, from houses from which children attended Board Schools, 16 per cent could definitely be traced to school influence; and that 48 per cent of the total notifications came from such houses. From September, 1903, to May, 1904, 29 school outbreaks were investigated, and the following classes of children were found by bacteriological proof to be spreading the complaint:—

1. Actual mild cases in attendance, 80 per cent.
2. Cases coming from infected houses, but presenting no symptoms, 12 per cent.
3. Cases of recrudescence after absence for notified diphtheria, 6 per cent.
4. Carriers without symptoms or demonstrable contact, 2 per cent.

The "actual mild cases in attendance" at school always present some symptoms, such as rhinorrhœa, cervical adenitis, slight sore-throat, or anæmia. A large proportion, 85 per cent, of the children that in some one or other of the above ways have been spreading diphtheria, are between the ages of 5 and 8 years. Thomas explains this fact as follows: From the diphtheria notifications at various age-periods in London "it appears that the years of heaviest incidence are 3 to 4, and 4 to 5; there is a slight drop from 5 to 6, from 6 to 7 there is a considerable drop, and from 7 to 8 a further considerable drop, afterwards the incidence becomes relatively level. Thus between the ages of 5 and 8 children are passing from a condition of high susceptibility to one of relative immunity. It is reasonable, therefore, to suppose that numbers of children during this age-period are in a condition in which they may be liable to slight unrecognized attacks of diphtheria. If diphtheria attacks a child in a class under the age of 5 the probability is that the child will go down with a severe attack, and will not remain in school to spread the disease; indeed, in no single instance amongst the outbreaks investigated has a babies' room been found to be the source of spread of diphtheria in a school. If diphtheria attacks a scholar in a class over the age of 8, and he continues to attend, it is to be supposed that the children in his class have a relative high immunity, and so many of them, at any rate, do not suffer from slight attacks. Between the ages of 5 and 8, however, if a child attends with diphtheria, a large proportion of the children are liable to attack in a slight form, and the class becomes a source of danger, a few of the children being ill enough to get the disease recognized as diphtheria, some carrying it home, and being excluded on account of diphtheria in the house, and more continuing to attend with slight clinical symptoms."

It is interesting to note that for some time children were excluded from attendance at school in whose throats the pseudo-diphtheria

bacillus was found; but "this led to so much dislocation of school attendance, that later this procedure was discarded, and it has been found to be quite sufficient to exclude cases of true diphtheria bacilli; the outbreaks ceasing when all children harbouring the latter are discovered and excluded."

The usefulness in checking the spread of diphtheria by bacteriologically examining all those persons who have been in contact with cases of diphtheria, and by excluding from school and from assemblies of any kind such as are found to have diphtheria bacilli, has been also demonstrated by Graham Smith.[2]

Pathology.—T. Gordon Pugh[3] has introduced a **New Stain** for diphtheria bacilli. It consists of toluidene blue (Grubler's, obtained from Baird and Tatlock, Hatton Garden), 1 gram, dissolved in absolute alcohol 20 cc. and distilled water 1 litre, to which glacial acetic acid, 50 cc., is added. The stain is usually applied for two minutes, but may without harm be left on the film for a considerably longer period. When the film is examined in a bright artificial light all the granules or beads (Babes-Ernst bodies), whether of bacilli or cocci, are seen to be stained of a reddish-purple. The bodies of diphtheria bacilli are stained a faint purplish blue, while those of other bacilli and of most cocci are of a pale but definite blue tint. "There is no difficulty in deciding whether the purple granules are in bacilli or cocci, and specimens (whether swab smears or from cultures) may as a rule be examined with considerable rapidity, for the stain appears constant in its action, and the film is easily focussed. Only one solution is thus required, and that a stable one, while there are within reason no time limits in its application."

H. A. Higley[4] has also introduced a new stain by the use of which he claims that a rapid bacteriological diagnosis may be made. He uses two stains: (*a*) Five drops of Kühne's carbolic methylene blue, in 7 cc. of tap water. (*b*) Ten drops of carbol-fuchsin in 7 cc. of tap water. The technique is as follows: "(1) Fix smear by passing three times through the flame; (2) Apply stain (*a*) for five seconds; (3) Wash with tap water, and dry with filter paper; (4) Apply stain (*b*) for one minute; (5) Wash, dry, and mount in balsam. . . . There are five important points in the carrying out of this technique, each of which must be carefully observed: (i) The smears must be as thin as possible; (ii) Stain (*a*) must not be left on longer than five seconds; (iii) Stain (*b*) must not be left on longer than one minute, nor shorter than forty-five seconds; (iv) The smear must be thoroughly washed and dried between the applications of stains (*a*) and (*b*); (v) Solutions (*a*) and (*b*) must be freshly prepared just before using. When thus stained the diphtheria bacilli appear as dark red or violet rods, irregularly stained, often containing polar dots. The unevenness of their contour and mode of division are regularly and distinctly brought out. The epithelial cells are stained a bright red, against which the colour of the bacilli contrasts with great sharpness.

The material which is used to make the smears is obtained from

the false membrane, by means of a strong wire-looped needle—the wire being flattened by filing at its curved extremity so as to form a sort of curette. The loop is sterilized by heat in the flame, and when cool lightly passed over the false membrane, some of which will always adhere to the wire. A drop of distilled water is now placed upon a cover-glass or slide, and the smear made in this drop with the large looped needle upon which is the material. Three to five smears are made with the material obtained; as a rule the second and third smears thus made are sufficiently thin." Higley examined 126 smears made directly from the false membrane in cases of diphtheria, or from the exudation present in suspicious cases. The results obtained by examining the smears were compared with the results obtained from examining cultures taken at the same time as the smears. Whenever the smear showed diphtheria bacilli, the culture also contained these bacilli; and negative smears corresponded to negative cultures.

Those who have had much to do with diphtheria clinically are well aware that *heart failure* is the most frequent cause of death. Bolton[5] gives an account of the morbid condition that gives rise to the heart failure. This is *fatty degeneration of the heart*, which occurs very early in certainly the majority of cases. Acute degeneration is also found in the cells of the motor nucleus of the vagus. This lesion is possibly connected with the repeated vomiting so frequently met with in toxic diphtheria. In cases fatal after three or four weeks' illness the changes just mentioned appear to pass off, and the lesion found is a degeneration of the peripheral nerves, and, occasionally, some interstitial myocarditis. These observations emphasize the necessity of absolute rest in bed during an attack of diphtheria, and for some weeks after.

Cutaneous diphtheria is not a very common form of the disease at the present day, that is, if the presence of membrane is taken as the diagnostic criterion. But a case recorded by C. Bolton and D. Brewer[6] shows that without bacteriological examination the true nature of the disease may be overlooked. The patient was a girl aged 1½ years, sent to the Homerton Fever Hospital with extensive gangrene of the skin of the left groin. Before admission cultures taken from the gangrenous skin had yielded pure growths of diphtheria bacilli. This observation was repeated and confirmed after admission. The patient was treated with antitoxin; but though the skin nearly healed there were persistent albuminuria, repeated vomiting, wasting, loss of reflexes, more or less generalized palsy, and finally death (forty-one days after the first symptom of the skin affection), from cardiac failure, the heart's action just before death being very rapid. A histological examination showed a small amount of fatty degeneration of the heart, much fatty change in the liver, and early but definite degeneration of the anterior cervical nerves.

Prognosis.—J. D. Rolleston[7] quotes Marfan as having pointed out two new signs of grave prognosis in the early cardiac paralysis

of diphtheria. The first is a progressive enlargement of the liver; the second is the appearance of a scarlatiniform eruption on the knees, sometimes also on the back of the elbows.

TREATMENT.—In a paper, entitled "Some Aspects of the Serum Treatment of Diphtheria," J. D. Rolleston[8] gives a good account of the non-therapeutical sequelæ of **Diphtheria Antitoxin**; by "therapeutical sequelæ" apparently he means the specific action of the antitoxin with respect to the toxæmia and the local exudation. The paper confirms a good deal that has been already described by previous writers; but there are some observations and facts either new or but little known, of which the most important are as follows:—

1. The injection of antitoxin appears to have a *sedative* effect. After large doses not only children but also adults will be drowsy for two or three days.

2. In his series of cases (upwards of 600 in number), the percentage of *rashes* was higher than in series given by other observers, 69 to 81 per cent, as against about 44 per cent. Doubtless very trivial and transient rashes get overlooked. "The frequency and intensity of rashes and other serum phenomena are in direct relation to the size of the dose, and in inverse relation to the character of the diphtherial attack." This observation is not to be explained by the fact that some cases are fatal before the rash has had time to make its appearance.

3. In cases of a *relapse* or second attack of diphtheria, the serum reaction may be very marked, and may occur very quickly after the injection. The urticaria is often profuse, and accompanied by much œdema, and there may be vomiting, rigors, and collapse. These phenomena are especially likely to occur after large doses; therefore, in relapse or second attacks it is highly advisable to inject early, when only a small dose will be required.

4. Rolleston believes the circinate erythema, so commonly seen after antitoxin, to be a *secondary* rash. He states that it is almost invariably preceded by urticaria, which may, however, be slight and fleeting. With this form of erythema you often find pains in the joints, muscles, and fasciæ, and adenitis of the cervical and submaxillary glands. When first coming out this rash may simulate measles, and the conjunctivæ may be injected. The secondary rash does not occur so often as the primary rash.

5. Another very common result of the injection of serum is *hyperidrosis;* this takes place usually within a few hours. Some scantiness of the urine and albuminuria may also occur.

6. "It may be laid down as a general rule that the more marked the antitoxin reaction (rashes, etc.), the better is the prognosis."

Treatment of Rashes.—The irritation of the urticaria is best relieved by **Menthol Ointment** (menthol ℥j; Par. alb. moll. ℥j).

For pain in the joints **Glycerin and Belladonna** fomentations are useful: the limb should be put in splints while it is painful. Salicylates afford no relief.

It has long been known that **Strychnine** is a valuable drug in

diphtheria. Nash[9] advocates its use in larger doses than it has been customary to employ ; " Nearly half a grain (0·03 gram) a day in divided doses during several consecutive days, followed by lessened doses for subsequent weeks." Nash states that he has never seen any but good results. [I have, however, seen symptoms of strychnine poisoning arise when the drug has been given for several weeks in much smaller doses than those employed by Nash.—E. W. G.]

Biernacki and Muir[10] give an account of 45 cases of diphtheria treated by antitoxic serum administered by **Intravenous Injection.** In some instances a rigor, a high temperature, and cardiac depression, followed the injection ; but these unpleasant effects were almost certainly due to a particular brand of serum, and not to the method of its administration. The clinical evidence is very slightly in favour of the value of intravenous injection. These observers anæsthetize the patient with a general anæsthetic, in some cases at any rate, while the intravenous injection is being given. [It appears to me that the risk of a general anæsthetic in a severe case of toxic diphtheria is hardly compensated by the possible slight advantage possessed by the intravenous over the hypodermic injection.—E. W. G.]

G. C. Garratt[11] has published a valuable paper on the early sequelæ of severe faucial diphtheria, and their treatment. He points out that in many of these cases, just as the local exudation is beginning to clear up, indeed, in some cases when it has cleared up, a certain set of symptoms occur, of which the most constant are vomiting, circulatory disturbances, albuminuria, and scantiness of urine. These frequently prove fatal. They may very well be due to the changes in the nucleus ambiguus of the vagus, already alluded to above in the abstract of Bolton's paper. The vomiting is very often most troublesome and intractable. It is independent of food.

Garratt strongly recommends the following treatment : " Directly any of the signs mentioned appear, give **Belladonna** by the mouth, or if it is rejected, by the rectum. If vomiting continue, let nothing whatever be swallowed, but feed by **Enemata** every four hours, adding tr. belladonnæ 20 to 30 minims to each. Twice in twenty-four hours add **Bromide of Potassium** or **Sodium** 20 grs. or more. These doses are for a child of three or four years. Give the first tube-feed about an hour after bromide. Roll round the child a big towel, and, spreading a mackintosh on your knees, take its head between them, while the nurse takes the body and legs. Fix the mouth a little open, and rapidly pass a good-sized silk-gum œsophageal (not nasal) tube, shaped to a curve beforehand, avoiding all unnecessary fingering of the fauces. When the resulting disturbance has passed, pour in hot water with a little sod. bicarb. at a temperature of 115° F. At first it is rejected, but persevere, and it will be found that the stomach grows more tolerant as it fills. Small quantities are a mistake ; put in 10 or 12 oz. Withdraw the tube rapidly but cautiously, and do not at once move the child, but, after an interval, put it back to bed with the utmost gentleness, and thereafter leave it absolutely quiet. It

will usually soon be asleep. . . . Continue feeding by rectum, and if all goes well, reduce gradually first the bromide and then the belladonna." As a cardiac stimulant in this condition Garratt recommends **Digitalis and Strophanthus**; he and Rolleston also praise **Adrenalin Chloride** (see below); 5 to 15 ♏ of the solution in camphor water every four or even every two hours. "Repeat tube-feeding every twelve hours, using now some bland fluid leaving no curd, in the same quantity and at the same temperature as before. Sanatose, with water, is useful, both for tube-feeding and enemata, and lactose or glucose or salt may be added. Peptonized milk and egg with salt may be used per rectum only. . . . When the child gets hungry, commence feeding very cautiously by the mouth." Garratt is very firm in rejecting strychnine and alcohol in this condition, as he believes they do positive harm. In this he differs from Nash (see above).

Treatment of Diphtheritic Paralysis.—J. D. Rolleston (op. cit.) advises, when regurgitation of fluids though the nostrils takes place, that all fluids should be thickened, and food should be taken slowly. When young children begin to cough over solid food, nasal or œsophageal feeding should be adopted. In severe cases it may be safer to administer food per rectum for a few days. The lower end of the bed should be kept raised, to prevent accumulation of mucus in pharynx, larynx, and lungs. When there is much secretion large doses of **Belladonna** should be given. Hypodermic injections of **Strychnine** are also valuable. When the heart is affected the recumbent position should be shortly enforced. If vomiting occurs small quantities of peptonized milk given frequently may be tried; if it still continues then rectal feeding. Rolleston has great faith in **Adrenalin Chloride** as a cardiac stimulant in diphtheria. He gives 5 minims of the solution made up to 1 drm. with aqua camphoræ every four hours, from the commencement of the time when the patient came under treatment for fourteen days or longer. The dose may be increased to 2 drms. every two hours; or 4 drms. may be given with rectal foods every four hours. Before omitting the use of adrenalin the dose should be gradually diminished. During recovery from paralysis massage of the limbs is useful.

I have elsewhere given my reasons for believing that **Very Large Doses** of diphtheria antitoxin are **Unnecessary**, and that an amount up to 16,000 units within the first twenty-four hours is sufficient. This opinion has been confirmed by the observations of Voelcker[13] at the Hospital for Sick Children, Great Ormond Street.

REFERENCES.—[1]*Brit. Med. Jour.* Aug. 27, 1904; [2]*Jour. Hyg.* April, 1904, and *Brit. Med. Jour.* July 2, 1904; [3]*Lancet*, July 8, 1905; [4]*Med. Rec.* April 1, 1905; [5]*Lancet*, Feb. 4, 1905; [6]*Ibid.* April 29, 1905; [7]*Pract.* Nov. and Dec. 1904; [8]*Ibid.* May, 1905; [9]*Ibid*, April, 1905; *Brit. Med. Jour.* July 1, 1905; [10]*Lancet*, Dec. 24, 1904. [11]*S. Barth. Hosp. Rep.* vol. xl.; [12]*Brit. Med. Jour.* Oct. 8, 1904; [13]*Clin. Jour.* Oct. 12, 1904.

DISPLACEMENTS OF UTERUS. (*See* UTERUS.)

DUODENUM (Surgery of). *A. W. Mayo Robson, D.Sc., F.R.C.S.*

Duodenal Ulcer.—Though ulcers of the duodenum may occur in any part of its course, they are much more frequent in the portion above the entrance of the bile and pancreatic ducts, which may be spoken of as the gastric portion, seeing that pathologically and developmentally the stomach and this part are so intimately related; whereas the portion of duodenum below the ampulla of Vater is pathologically and developmentally related to the intestines, and like the jejunum is little liable to ulceration.

I am fully convinced from personal experience in this class of cases, that ulcer of the duodenum is not only a very much commoner but also a much more dangerous malady than is generally recognized, the chief dangers being those of hæmorrhage and perforation. Apart from the dangers attending these ulcers, they are a frequent cause of chronic indigestion, especially in middle-aged men, though they may occur at any age, and in both men and women.

The symptoms are said to be obscure, but while in some patients distinctive signs are wanting until the more serious complications ensue, the greater number will complain of pain from three to four hours after a meal, which is relieved by taking food; a pain that may be aptly described as a hunger pain, which pain is also frequently complained of in the night at any time from midnight to the early hours of the morning; the pain or discomfort awakening the patient and compelling him to get up and take food or a dose of carbonate of soda to get relief. Associated with the pain, which frequently passes through to the back beneath the right scapula, there is usually tenderness beneath the right costal margin with rigidity of the right rectus, and owing to the associated catarrh of the duodenum, it is not infrequently attended by slight catarrhal jaundice and occasionally pancreatic catarrh.

Under care in diet, and the use of **Alkalies** and **Saline Aperients,** the symptoms generally subside, but recur in a longer or shorter time, so that this class of patient will frequently tell one that the symptoms have persisted for months or years, and that they have learnt to treat themselves. In some cases anæmia, suggestive of the pernicious type, may be present, due either to slight frequently repeated hæmorrhages passing off in the motions unnoticed or to absorption from a chronic ulcer leading to chronic septicæmia.

Treatment.—I have a suspicion that duodenal ulcer when once chronic is seldom cured, though it can generally be relieved, by medical and general treatment. Fortunately the operation of **Posterior Gastro-enterostomy,** which by setting the duodenum at rest enables the ulcer to heal, is a most efficient remedy, and one that in competent hands is attended with very slight risk, the mortality being not more than 1 to 3 per cent. Some surgeons have thought it advisable to occlude the pylorus at the same time, but I have not found this necessary, and have not thought it desirable.

Excision of a duodenal ulcer, unless it be just beyond the pylorus,

is attended with greater risk, and is as a rule unnecessary; moreover duodenal and gastric ulcers are in a certain proportion of cases found together, and gastro-enterostomy at the same time cures both.

Perforating Duodenal Ulcer.—The diagnosis of perforating duodenal ulcer is often difficult, and many of the cases operated on have been mistaken for appendicitis, ruptured bile-ducts, perforated gastric ulcer, and other conditions that may lead to acute peritonitis starting on the right of the abdomen. In all cases of perforative peritonitis, to which duodenal perforations are no exceptions, an exploratory abdominal section should be performed at the earliest possible moment, and experience has shown that it is necessary to close the opening in the duodenum, as drainage alone has not given satisfactory results.

The prognosis depends chiefly on the time intervening between the perforation and the operation.

Cancer. Primary Carcinoma of the Duodenum.—Brill[1] reviews the literature of recorded cases of primary cancer of the duodenum. Of all cases of malignant disease of the intestine, those of the small gut only form 2·3 per cent. Of the various parts of the small intestine the jejunum is never attacked, and the duodenum rather more frequently than the ileum, if cases starting in the ileo-cæcal valve be excluded. Of the three parts of the duodenum, the second is much the most frequently attacked, and the third the most seldom. The growth is generally composed of columnar cells, but spheroidal-celled growths occur rarely. Both these are often subject to necrotic or colloid change. They tend to assume an annular form, producing marked stricture of the lumen. The patients are generally men (three to one) of an average age of fifty-five, and the duration of life about seven months. The symptoms differ according to the site of the growth. If above the biliary papilla, only signs similar to those of pyloric obstruction will be present. If involving the bile-duct, then chronic and persistent jaundice is added; and lastly, in the rare cases where the growth is below, and does not involve the ampulla of Vater, there is a recurrent vomiting of bile and pancreatic fluid. In the majority of cases only palliative treatment is possible, but where the disease is limited to the first part of the duodenum an excision should be feasible. [Brill is wrong in saying that the jejunum is never attacked by cancer, as I have removed successfully a cancerous stricture of the jejunum from a woman over sixty years of age who was living some years later. The specimen is in the Royal College of Surgeons' Museum. I have also operated on one case of cancer at the duodeno-jejunal junction.]

An exhaustive paper on the subject of carcinomatous stricture of the duodenum was published by Rolleston in the *Lancet* for April 20th, 1901.

REFERENCE.—[1]*Brit. Med. Jour. Suppl.* April 29, 1905.

DYSENTERY. *J. W. W. Stephens, M.D.*

Windle[1] recommends the following mode of administering **Ipecacuanha** in acute dysentery (amœbic). The patient is kept without any fluids for two hours, and is given a sleeping draught and told that a second draught will be administered just before he falls asleep.

The sleeping draught consists of :—

℞	Chloral hydrat.	gr. xx–xxx	Syr. aurant.	ʒii
	Liq. opii sed.	♏ xx	Aq. ad	ʒi

This takes effect in about a quarter of an hour.

The following mixture is then shaken up and poured out just before being taken :—

℞	Pulv. ipecac.	gr. xx–xxx	Aq. chloroform.	ʒj
	Mucilag. tragacanth.	q. s.		

Bishop[2] advocates **Cinnamon** in the treatment of dysentery (? variety). He gives Chinese cinnamon bark freshly powdered in a 60 gr. bolus every six hours. **Adrenalin** was also given to check hæmorrhage.

Dysentery Bacillus.—Hiss[3] from his studies concludes that the "true" dysentery bacillus is distinguished from various other strains by the fact that *B. dysenteriæ* (Shiga and Kruse) does *not* ferment mannite ; all the other groups do, as well as *B. typhoideus*. It also ferments monosaccharids readily and occasionally maltose.

Amœbæ.—Craig[4] has investigated the subject of the amœbæ found in the gut of dysentery cases and of other diseases, and of healthy patients. He confirms Schaudinn's[5] work on this subject. The latter author simplified the question and brought order into the very confusing statements on the subject scattered throughout scientific literature. The subject according to the standpoint of these authors may be put in the following way. There are two distinct species of amœba found in man : (1) *Entamœba coli* ; and (2) *Entamœba histolytica v. dysenteriæ. Entamœba coli* is non-pathogenic and has nothing to do with dysentery, nor will it produce dysentery in cats, whereas *Entamœba dysenteriæ* is the cause of amœbic dysentery in man and will produce dysenteric lesions in cats.

Entamœba coli occurs in certain localities in healthy individuals, but for its detection it is necessary to produce a diarrhœal condition by giving 1 ounce of magnesium sulphate. The percentage of cases that will show this amœba varies very much, according to locality, and probably according to the skill of the observer ; thus the figures given vary from 4 per cent to 50 per cent. This amœba therefore can be found in the gut together with the true *Amœba dysenteriæ* ; consequently it is necessary to distinguish carefully between the two.

1. *Entamœba coli* measures from 10 to 20 μ (a red cell=about 7·5 μ). It never exceeds 25 μ in diameter and the majority are 10 to 15 μ. *E. dysenteriæ* : the majority measure 25 to 35 μ or more in diameter. The criterion of size, though of importance, yet should not be used as a sole diagnostic factor.

2. *E. coli* : in fæces partly solid or that have been kept for some time ; encysted forms occur, 10 to 15 μ in diameter. *E. dysenteriæ* never forms cysts of this kind.

3. *E. coli* has a peculiar opaque grey colour ; this is very characteristic, and is especially marked in young forms. *E. dysenteriæ* often has a peculiar greenish colour.

4. *E. coli:* when at rest the separation into ectosarc and endosarc cannot be made out. The pseudopodia of the moving organism consisting of ectosarc are *less* refractive than the endosarc, and the ectosarc is with difficulty distinguished; whereas in *E. dysenteriæ* the ectosarc of the pseudopodia is highly refractile, of a glassy appearance *highly characteristic.* The endosarc of *E. coli* is finely granular, that of *E. dysenteriæ* very commonly coarsely granular. In stained specimens (Romanowsky) in *E. coli* the ectosarc stains less intensely than the endosarc; in *E. dysenteriæ* the ectosarc stains more intensely than the endosarc.

5. *E. coli* has in great majority of cases no vacuole. *E. dysenteriæ* when full grown may appear to be nothing but a mass of vacuoles, giving rise to very characteristic forms. *E. coli* may take up red cells (two). *E. dysenteriæ* may be filled with them.

6. *E. coli*: the nucleus, nearly central, is distinct, and has a well defined nuclear membrane, highly refractile in certain lights, and is larger in proportion to the size of the body than in *E. dysenteriæ*: nucleus is lateral, not easily made out in majority of specimens (fresh); it is about 5 μ in diameter.

7. *E. coli*: motility limited, often absent and never seen in fæces after 15 minutes, and never active like *E. dysenteriæ*: motility active and progressive in character in *fresh* fæces, but may be only slight; the pseudopodia of this species are longer; in *E. coli* they are blunt, short, and not easily seen.

8. *E. coli* multiplies by simple division and by formation of cysts containing eight daughter amœbæ. *E. dysenteriæ* by simple division and by formation of spores or minute cysts at the periphery of the endosarc. These are 3 to 7 μ in diameter, and have eventually a bright brown yellowish colour, and are highly refractile, but they are not found in fresh fæces.

9. *E. coli* may contain one or two red cells. *E. dysenteriæ* frequently contains 10 or more; when these are decolorized they may be mistaken for vacuoles. Bacteria and crystals are other contents.

It must be noted in conclusion that in dysentery both forms of the amœba may occur together, and hence the detection of an amœba without clearly ascertaining to which species it belongs does not imply a diagnosis of amœbic dysentery. The amœba of dysentery is characterized then, if these observations be true, by its larger size, its highly refractile ectosarc, and by its contents in the fully grown stage often consisting of numerous vacuoles and red cells, etc.

References.—[1]*R.A.M.C. Jour.* 1905, p. 362; [2]*Brit. Med. Jour.* Ap. 15, 1905; [3]*Jour. Med. Research,* vol. xiii. No. 1; [4]*Amer. Med.* May 20, 1905. *Ibid,* June 3, 1905; [5]*Arb. a. d. kais. Gesundheit.* 1903, xix. Hft. 3, p. 563.

EAR (Diseases of). *James Kerr Love, M.D.*

Diagnosis.—The subject of hearing testing is one of the most difficult in the whole range of aural surgery. At present the general practitioner, and for the most part the aural surgeon, contents himself with the watch, whispered speech, and one or more tuning-forks for the work

of his consulting room, rejecting the more complicated appliances as too costly and too troublesome for use in any but special cases. No simple and convenient substitutes for these have yet been given to the profession, but it is well to take cognisance of the praiseworthy efforts of investigators, by which it is probable that in time accurate and easily applied tests will be reached. Such an effort is that of Ostmann.

V. Conta (1864), Politzer (1869), Lucae (1883), and Hartmann (1885), have all contributed towards the solution of the problem of hearing testing. More recently Bezold, with the co-operation of Edelmann, has produced a continuous tone series of tuning-forks, which, along with an improved Galton's whistle, has been used with much success in delimiting the residual hearing (hearing islands) in the ears of deaf mutes. But there is no means of producing a sound of constant intensity in the forks of the Bezold-Edelmann series, and except that they are of greater range (16 vib. to C 5 4056 vib.) than most other sets they are of no special value in the consulting room.

In 1903 Ostmann[1] wrote his book, "An Objective Hearing Measure and its Use." The forks of Bezold-Edelmann's continuous tone series are fixed in a vice, which latter is securely fixed to a stone wall. A microscope for the observation of the vibration of the tuning-forks is also securely fixed to the stone wall. Fine flour dust is now sprinkled over the prong of the fork the vibration of which is to be watched, a particle of flour near the end of the fork is selected for observation, and a gag is fixed between the fork prongs, which after stretching them to a known point is removed, thus liberating the stretched prongs and setting them in vibration; this ensures uniformity of force in the production of the note. Three persons are required to make the observations. The hearing time for a normal ear is fixed for each fork, and with this is compared the time during which any fork is heard by a person suffering from an ear affection.

More recently Ostmann[2] contributes a paper on the Nature and Aim of his method, which are to determine the amount and the form of the disturbance of hearing. Ostmann thinks his method will help in determining the seat of the disease, and by comparison with pathological findings help to develop our knowledge of the physiology and pathology of the ear. In adopting Ostmann's method a set of forks standardized to that used by him must be procured, and to lessen the work of the practitioner Ostmann has elaborated a series of logarithm tables by which the results of his observations may be calculated. Ostmann's work is undoubtedly accurate and scientific, but the method is involved and the apparatus too costly. The present writer has a complete set of Edelmann's forks such as Ostmann uses, and which cost thirty pounds. It is to be hoped that Ostmann's work will lead us to something simpler and less costly.

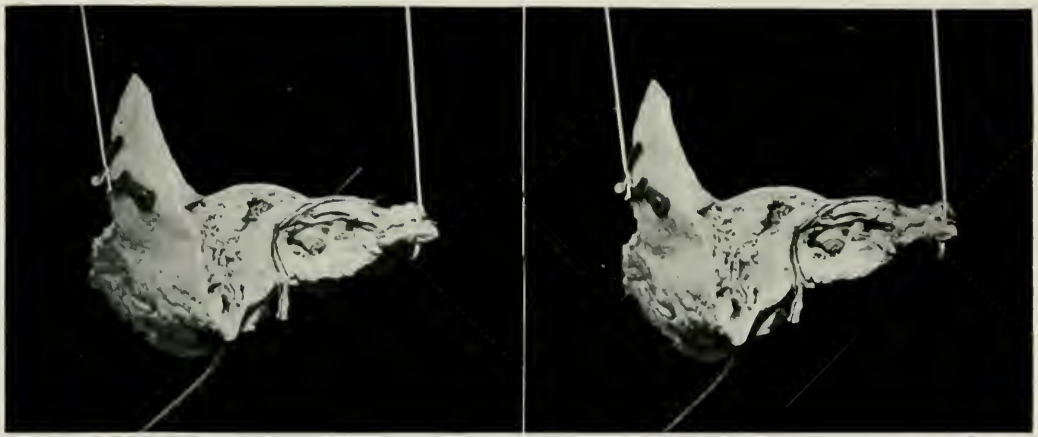
The difficulties of the problem of hearing test is well exemplified by the conclusion of a report of a committee, consisting of Politzer, Gardenigo, and Delsaux, submitted to the Seventh International

A SERIES OF SIXTEEN STEREOSCOPIC VIEWS

Illustrating the Radical Mastoid Operation.

By JAS. KERR LOVE, M.D.

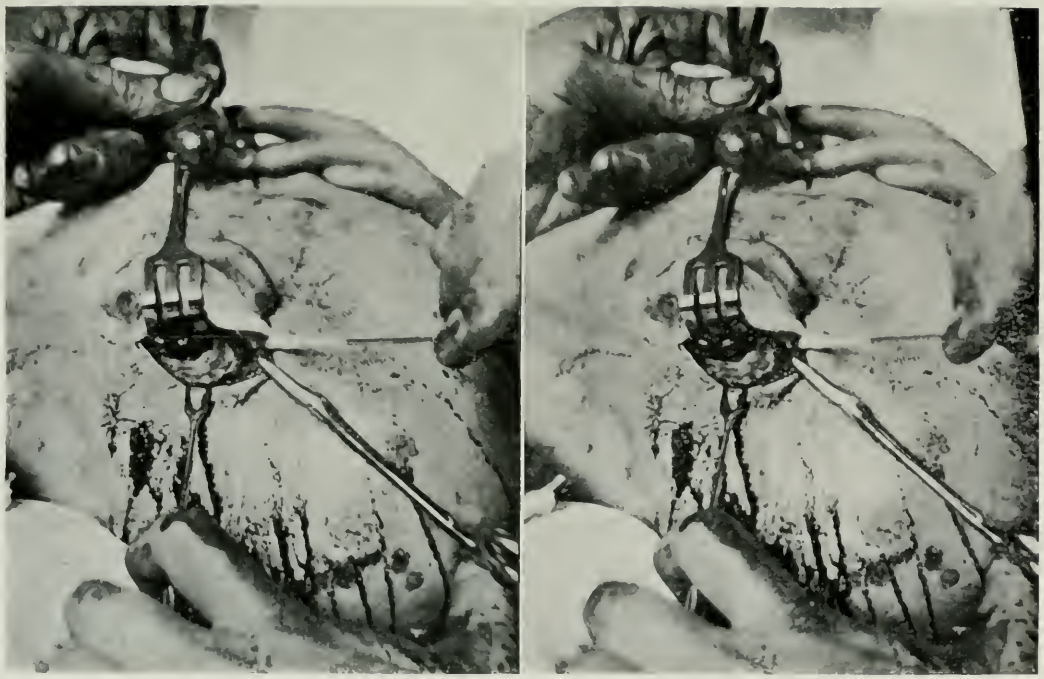
PLATE V.



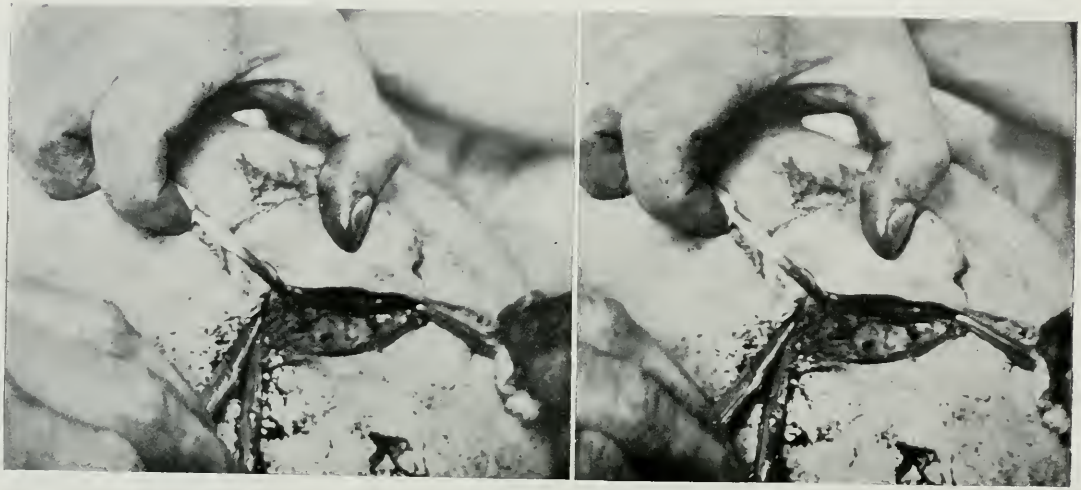
To show the course of the Facial Nerve.

PLATE VI.

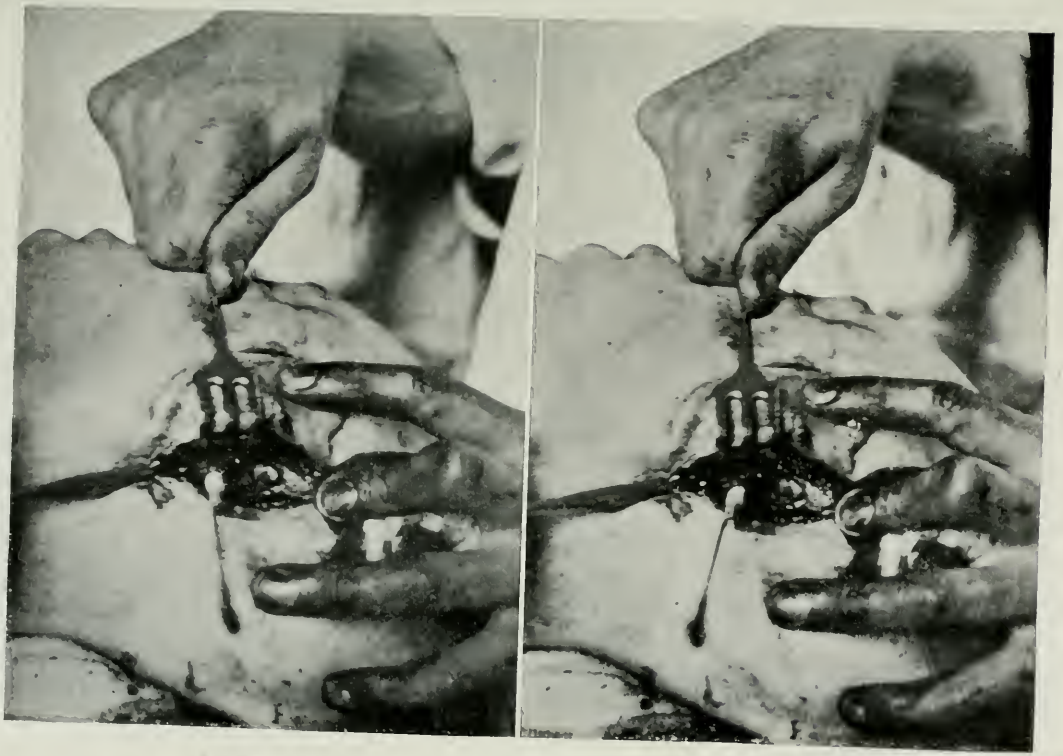
To show the Facial Nerve and the Semi-circular Canal.



CASE 1a. The Post-auricular incision in the Mastoid operation. (As the operation proceeded the incision had to be lengthened.)

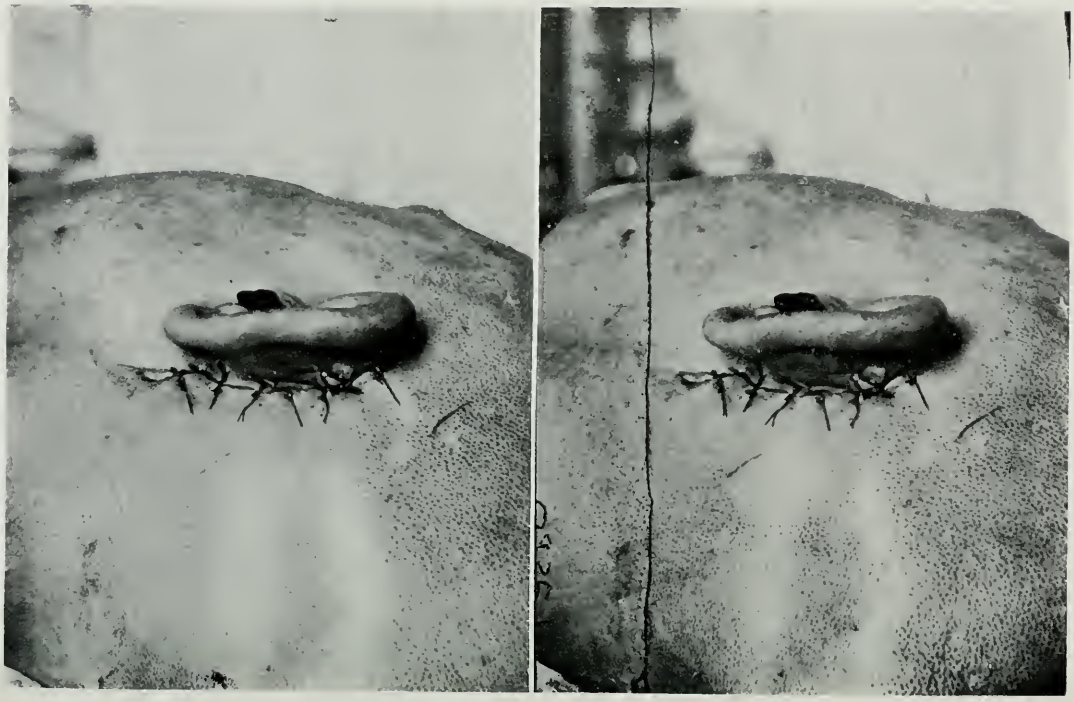


CASE *Ib.*—Stacke's guide in position: preparing to remove the "Bridge." The Mastoid Antrum is opened.

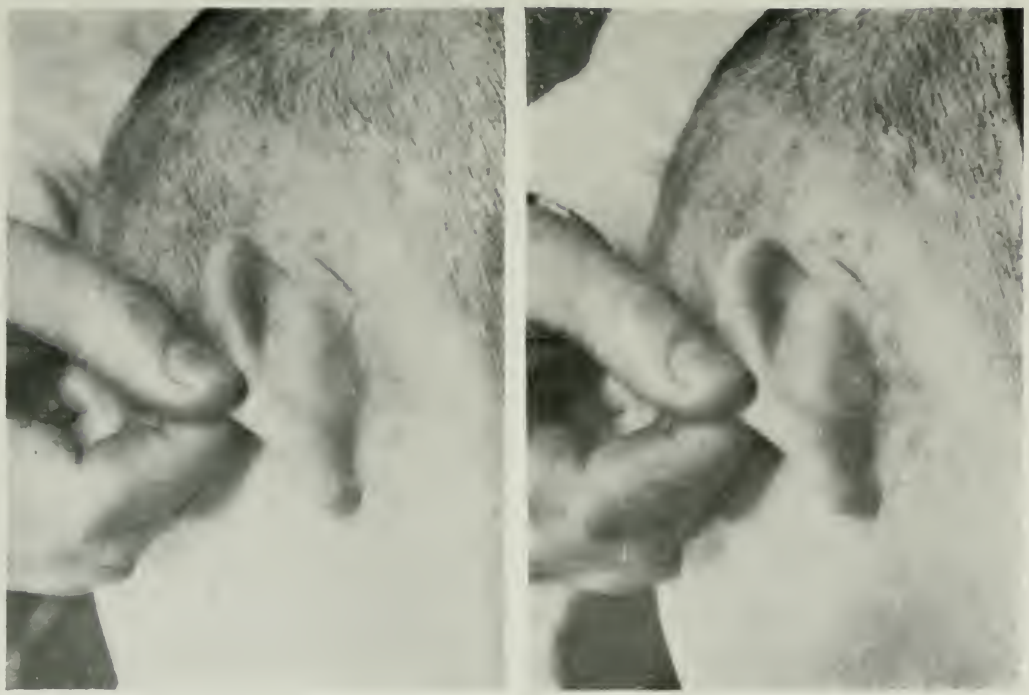


CASE Ic. The "Bridge" removed. A cotton-tipped probe is in the middle ear.*

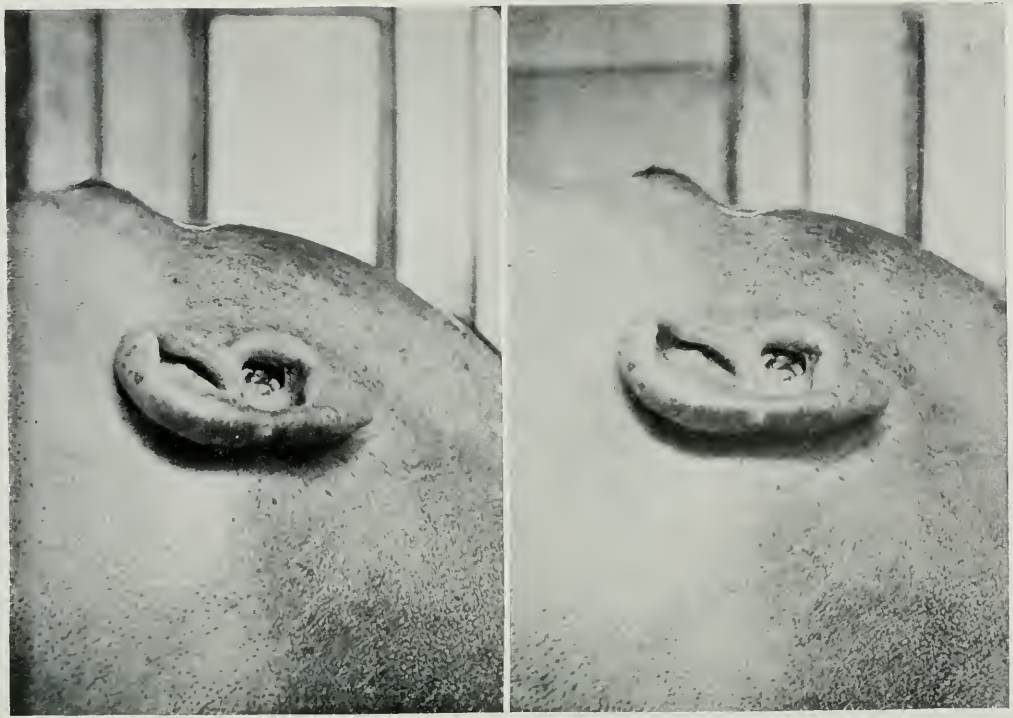
*The printer has printed for the hand. As a result the parts in the hollow of the operation wound are too dark, and detail is lost.



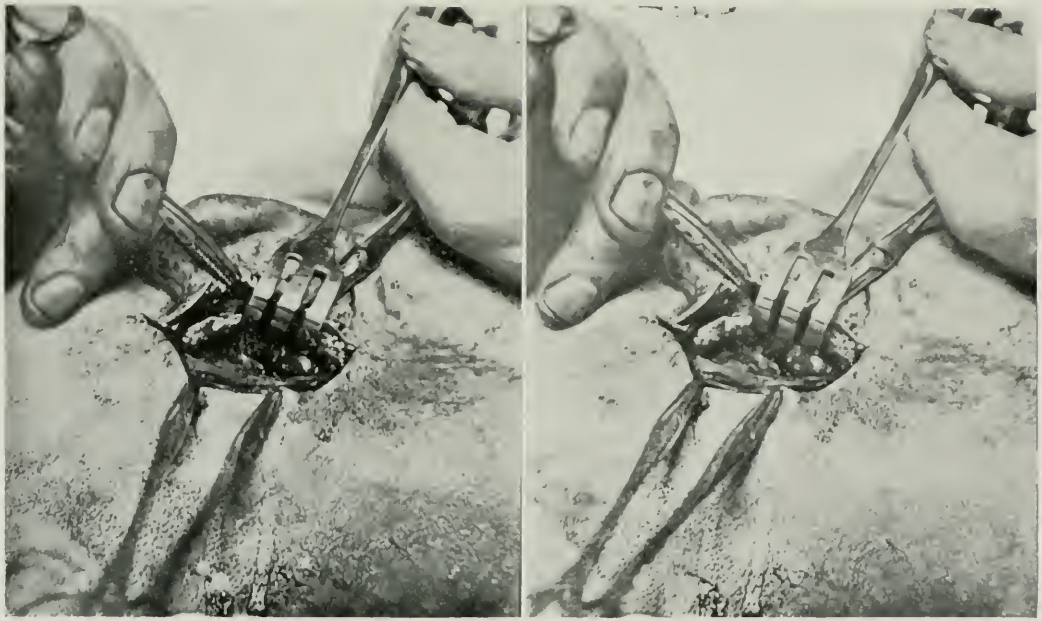
CASE Id.—The Mastoid operation completed. A drainage tube occupies the external auditory canal.



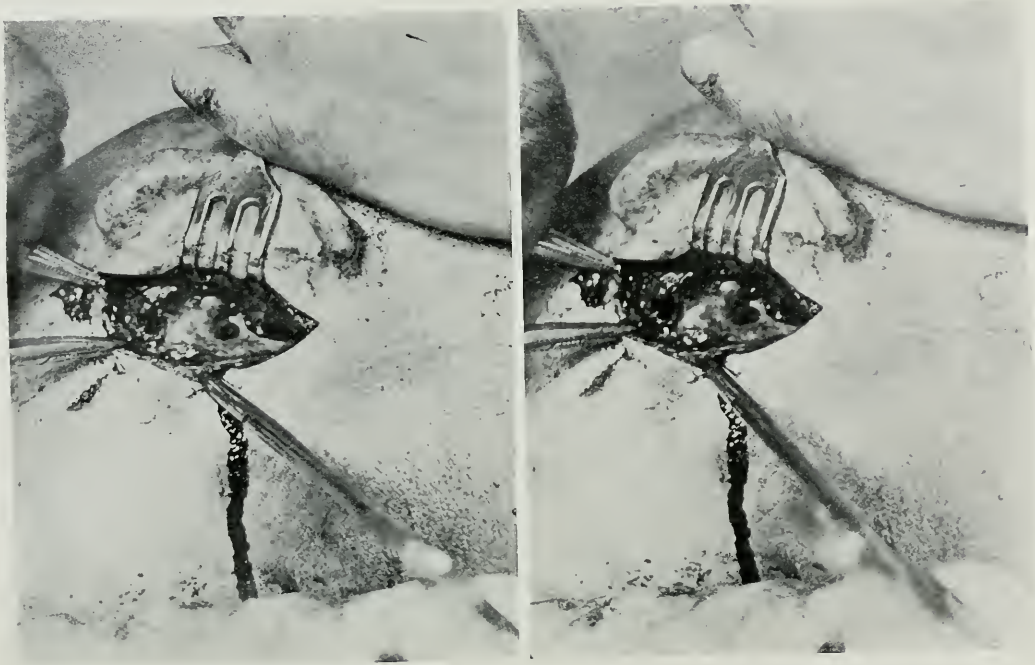
Case I.—The Post-auricular wound on the 13th day after the operation. Complete healing of the antro-tympanic cavity and cessation of discharge took place within 4 weeks.



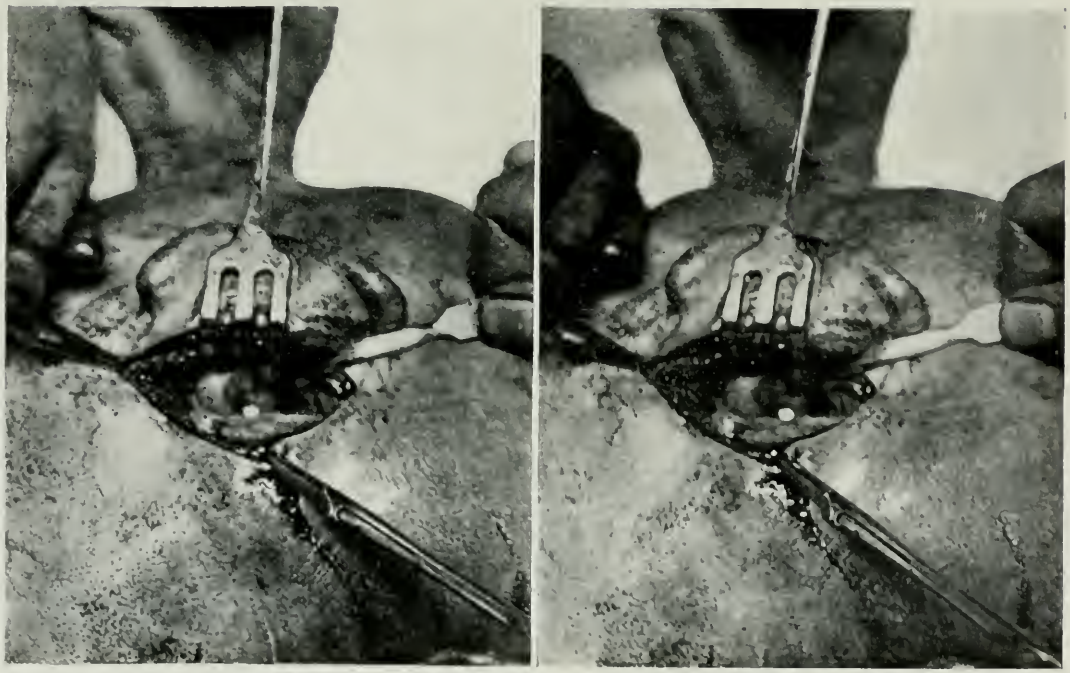
CASE IIa.—A Polypus occupies the external auditory canal.



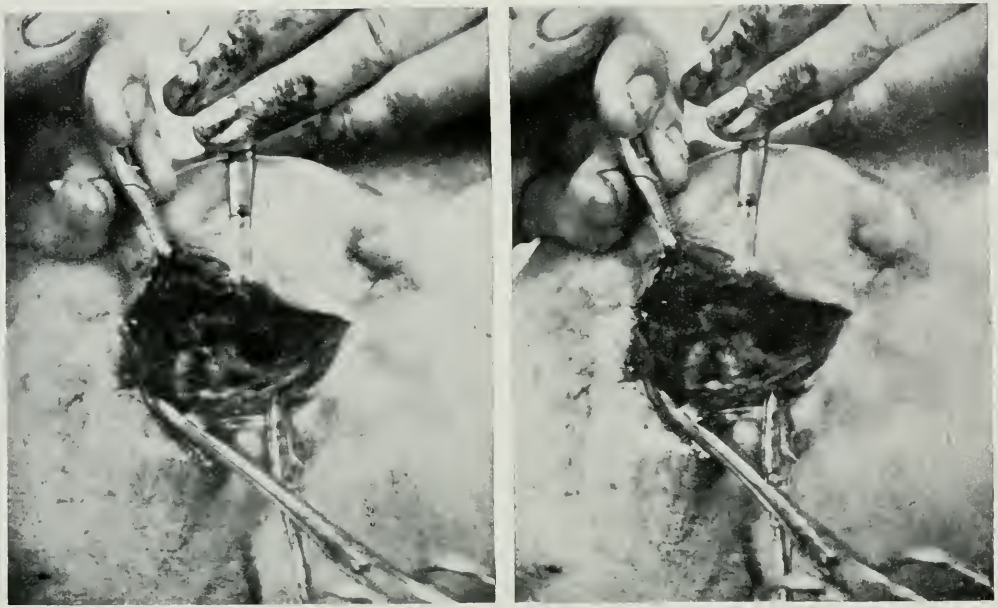
Case 11*b*. – The Post-auricular incision. Part of the Polypus mass now projects into the wound.[1]



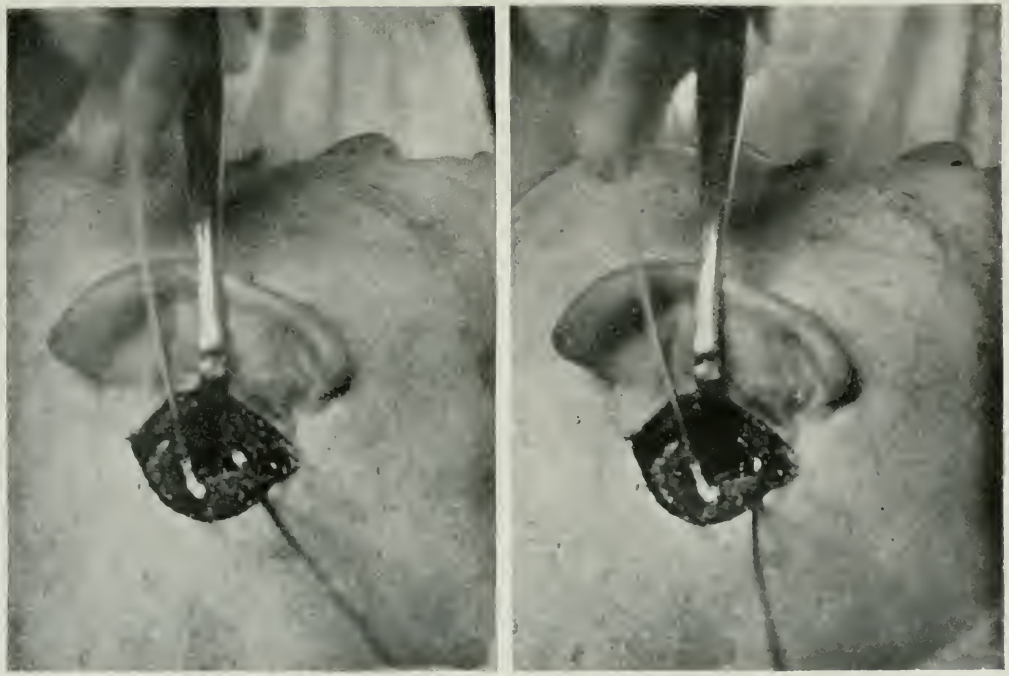
CASE IIc.—The Antrum is now opened, but the "Bridge" is still intact.



CASE II*d*. Preparing to remove the "Bridge." A Stacke's guide need not be used. The guide is placed here with its tip projecting into the opened antrum.

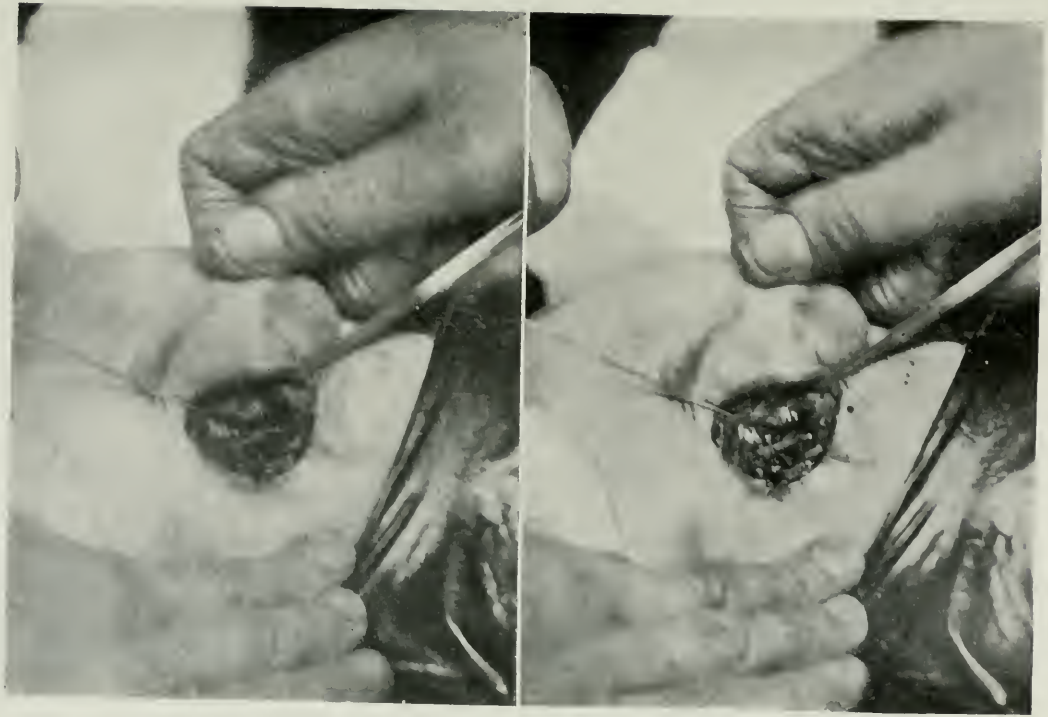


CASE III.—The "Bridge" ready for removal. The external auditory canal is the upper, the antrum the lower, cavity.

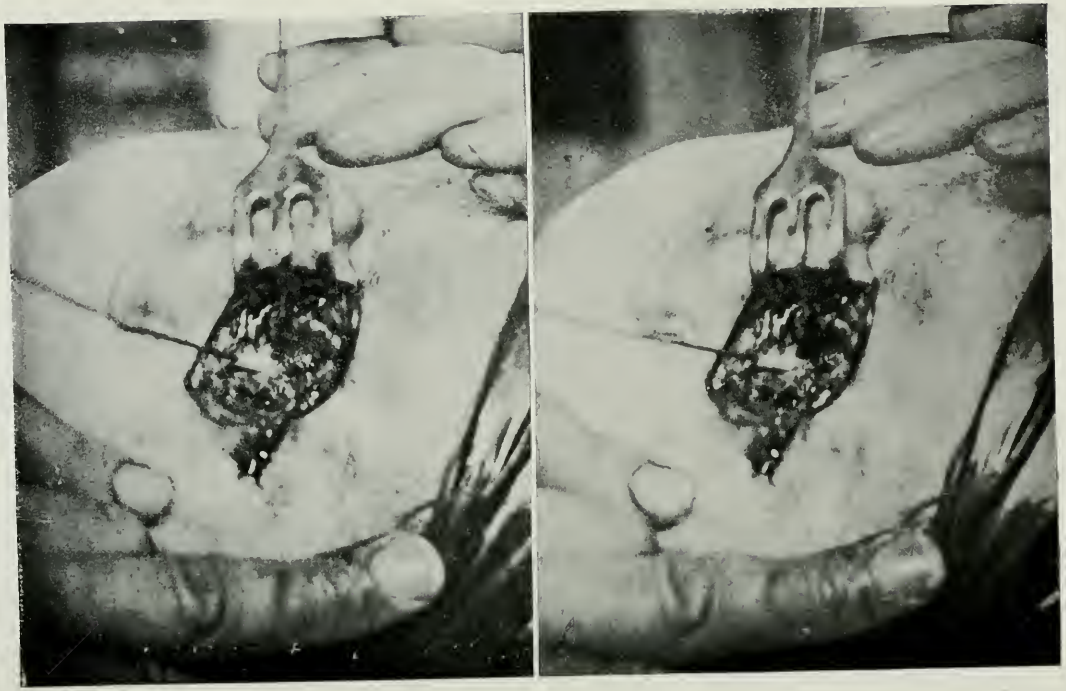


CASE IV*a*. Bone operation completed The Cotton-tipped Probes occupy the middle ear and the mastoid antrum respectively.

CASE IV*b*.—Bone operation finished. The preparation appears rough because of small beads of blood. The ridge extending inwards from right to left of the picture is the facial ridge



CASE V*a*. Preparing to remove the "Bridge." The tip of a bent probe projects from the external auditory canal into the antrum, which, along with the surrounding mastoid cells, has been widely excavated. The probe-tip is seen as a white glistening speck



CASE V*b*. The Bone operation completed. The cotton-tipped probe lies above and in front of the facial ridge. Below and behind are the opened mastoid cells.

Otological Congress which met at Bordeaux in August, 1904[3]. "There are still so many points in this important question which are obscure, that we suggest the formation of a permanent international commission for the measurement of hearing, which shall meet once a year and report to each Otological Congress."

Sohier Bryant[4] describes a phonographic acoumeter for which he claims the following advantages: (*a*) that it gives accuracy of hearing tests not hitherto attained, (*b*) it furnishes a universal standard whose records are always comparable. This instrument consists of an Edison standard phonograph supplied with permanent master records of carefully selected monosyllabic words in common use. The sound is led by tubes to the ear, and valves are provided for graduating the sound or shutting it off altogether. But to the present writer it does not appear that it is in voice tests that accuracy is most wanted in testing hearing. Whispered speech is fairly efficient as a voice test. It is for the diagnosis of the seat of disease that better tests than we have are required, and for this purpose we must have simple sounds (like those of the tuning-fork) without overtones.

Surgical Anatomy of the Facial Nerve.—Alderton[5] injected the facial canal in dried temporal bones from the stylo-mastoid foramen with boiling solution of carmine in beeswax. Of eighteen temporal bones which had been carefully prepared in this way, seven marked and two dubious dehiscences (fenestræ) were displayed on section in that part of the facial cone bordering on the cavities of the middle ear. No dehiscences were discovered in the bony wall between the facial canal and the labyrinthine cavities. These statistics not only explain the frequency of facial paralysis—usually temporary—after the mastoid operation, but would lead us to expect a greater frequency of paralysis as the result of operation and during the course of suppurative middle ear disease. Alderton also gives the measurements in those cases of the facial cone from the suprameatal spine—average 15·9 mm. While such measurements are important, it seems more important during the actual radical operation to insert a bent probe into the aditus as a guide to the antrum, and thus make sure that the facial nerve will not be injured.

Acute Middle Ear Suppuration.—At the British Medical Association Meeting[6] held at Leicester in July, 1905, "The Treatment in Preventing Acute Middle Ear Suppuration from becoming Chronic" was discussed. Early incision of the swollen or bulging tympanic membrane was almost universally recommended by the speakers. With regard to the risk of inflation a good deal of difference of opinion was expressed, but most of the speakers thought it unnecessary. Most speakers thought the removal of concomitant nasal and nasopharyngeal growths should not take place till after the acute middle ear suppuration had subsided. When the mastoid operation had to be done in acute cases the partial rather than the radical operation was, according to most speakers, indicated. Sprague[7] contributes a paper on Scarlatinal Otitis, which he divides into: (1) Acute serous; (2) Acute suppurative;

(3) Acute necrotic. He advocates early paracentesis, and emphasizes the contagiousness of the discharge, which contains a streptococcus.

Ear Diseases in Children.—At the New York Academy of Medicine in December, 1904, a series of papers on this subject were read[8]. The anatomy of the child's ear was dealt with by Bryant; the pathology was taken up by Kenefick; otitis media in children by Jacobi; and the operative treatment of diseases of the ear in children by Dench. The last-named surgeon holds that in young children, if myringotomy does not relieve the pain and cause the temperature to fail in a few days, the mastoid operation should be done, and in young children he considers that high temperature alone, if it persists, is a sufficient reason for doing the mastoid operation.

Mastoid Operation.—Four of the following cases of the radical mastoid operation were operated on in the wards of the Royal Infirmary (Glasgow) without selection, and in the order in which they were admitted between 5th and 18th June, 1905. The fifth case was operated on in the Queen's Park Home on 17th Sept., 1905.

The cases are brought together because they were used for the production of stereoscopic pictures of the radical operation. The cases have nothing in common except that they all seemed to me to require the operation. Two were cases of chronic middle ear suppuration which had long resisted non-operative treatment. Two were chronic middle ear suppurations, which had not been treated, but in which acute mastoiditis developed. One was a mastoid periostitis following an acute middle ear suppuration. In all the radical mastoid operation was conducted on the same lines, and in all healing and the cessation of discharge took place in from four to nine weeks.

Case I.—Janet H., æt. 16, transferred from a medical ward to the ear ward with mastoid tenderness and a history of chronic middle ear suppuration (left ear) lasting since childhood. On the medical side she was under treatment for fits.

Operation, June 8th.—Mastoid process sclerosed with a little pus in a deeply placed antrum, necrosed incus removed. Healing complete in four weeks.

Case II.—James O'B., æt. 21, admitted from out-patient department with mastoid tenderness, copious discharge from right ear, and a polypus protruding from the external auditory canal. Duration of disease, nineteen years.

Operation, 12th June.—Mastoid cells well marked, filled with granulation masses and pus. Healing in nine weeks.

Case III.—James B. S., æt. 18, admitted on 10th June with sinus on mastoid process of right side. A few days previously an abscess was opened at the out-patient department, but as the bone seemed swollen and as the discharge was copious, pus in the cells was suspected.

Operation.—15th June.—Nothing found in the cells or antrum.

Case IV.—A. McG., æt. 9 years, had been under my care since March for chronic suppuration of the right middle ear. On 17th March I removed post-nasal adenoids and removed granulation masses

protruding through the posterior superior quadrant of the right tympanic membrane. Epidermic masses were also removed from the left ear. The disease dates from an attack of scarlet fever four years ago. As continuous treatment till May did not cause healing, and as the granulation masses recurred, I advised operation.

Operation (19th June).—Mastoid cells found to contain pus, and the antrum granulation masses. Healing and cessation of discharge took place in seven weeks.

CASE V.—Christian C., æt. 4 years, had been under my care for a year for chronic middle ear suppuration, which commenced when she was a year old. There were two perforations, one just behind the malleus over the incus which was necrosed, and one in front of the malleus. At first the discharge greatly diminished, and indeed almost ceased, but in time a granulation mass developed and hung from the roof of the middle ear. Operation was therefore decided upon.

Operation (17th Sept.).—Mastoid cells very well developed. Before opening the bone a blue discoloration shone through the otherwise normal bone surface, and when the cells were opened they were filled from the top of the process to the zygoma and back to the sinus-mastoid wall with dark red granulation masses. Healing and cessation of discharge took place in seven weeks. (Note the large cells filled with diseased products at four years.)

The stereograms (*Plates V to XX*) are meant to display the steps of the radical operation from the making of the post-auricular incision to the stitching up of the same. A drainage-tube is kept in the external auditory canal for a week, but the wounds are never packed, and no syringing or spirit drops or any medicament is used. After the first two dressings, when the tube is removed the deeper parts are carefully dried out with fine cotton tips, but the syringe is never used. Skin-grafting was not adopted in any of the cases.

Mastoiditis.—Brandegee[9] reports a case of double mastoiditis with extensive involvement of the zygomatic cells, and states that no mastoid operation is complete until the zygomatic cells are thoroughly explored. In his case the entire posterior zygomatic root was honey-combed, and it was necessary to ablate it.

Middle Ear Suppuration.—Dench[10] contributes a paper on "The Radical Operation in Chronic Middle Ear Suppuration." After emphasizing the points of importance in the performance of the bone operation, Dench contrasts the results of the operation when skin grafting is adopted and when it is not. As a rule he inserts the grafts at the time of the first operation, except where bleeding has been profuse or the dura has been exposed. He finds no difference in the ultimate result whether grafting be employed, but believes the period of healing to be shortened by the application of the grafts. Arnold Knapp[11], on the other hand, referring to skin grafting, says that in cases which are difficult to heal the disease is most frequently situated in the tympanum, and consequently the

flap or skin graft cannot be employed. If the tympanum is healthy the healing takes place rapidly without any aid of skin grafts.

Removal of Bullet.—Ledermann[12] reports a case of radical operation for the removal of a bullet from the internal tympanic wall resulting in improvement in the subjective symptoms.

Otosclerosis and Chronic Aural Catarrh.—Except that the importance of dealing with the conditions which in earlier life predispose to these diseases (post-nasal adenoids and intra-nasal obstruction) has been emphasized on all hands, not much has been added to our knowledge in the way of treatment. The general helplessness of the otologists in dealing with the symptoms of these diseases when they have become fully established is well displayed by the discussion which took place at Oxford (British Medical Association meeting) in July and August, 1904.

The best work on otosclerosis of recent years is by Deuker[13]. This author, in an extensive monograph, discusses the pathology from the earlier cases of Katz (1890), Habermann (1892), to the more recently published cases. He reviews the various methods of treatment by **Iodide of Potash, Pneumo-Massage, Operation,** etc., but seems to put most faith in the internal administration of **Phosphorus.**

The **High-Frequency Current** has—in the experience of the present writer and of those who have most recently tried it—not realized the hopes which were entertained of it.

Intracranial Complications of Chronic Middle Ear Disease.—A series of papers[14] was read on the "Intracranial Complications of Middle Ear Suppuration" at the Meeting of the American Laryngological, Rhinological, and Otological Society, held at Boston, June 5th to 8th, 1905. Meningitis was discussed by McCuen Smith; encephalitis and brain abscess by Frederick Jack; sinus thrombosis by McKernon; and the pathological findings in intracranial complications by Harris. A good table dealing with the differential diagnosis of these three conditions is appended. The papers are valuable, chiefly on account of their covering the whole field of intracranial complications.

Gifford[15] calls attention to the disadvantages of the dry gauze dressing after the operation for septic thrombosis of the lateral sinus. Gifford's contention is that such a dressing acts as a plug and not as a drain, and he applies wet dressings changed several times a day. Elsewhere in this paper the present writer gives examples of how the treatment after the mastoid operation may be successfully conducted without packing. The external auditory canal is occupied by a drainage tube for a week or ten days. The purpose of this tube is to support the flap, and it seems probable that if the flap is securely stitched up, this tube might easily be done away with, the external auditory canal forming an ideal drainage tube, if it can only be kept open.

Betham Robinson[16] reports a case of cerebellar abscess secondary to middle ear disease in which recovery took place.

Diseases of the Internal Ear.—At the twenty-first ordinary meeting

of the Otological Society of the United Kingdom[17], a discussion took place on "Vertigo, its Pathology and Treatment." Sir Victor Horsley discussed the subject chiefly from the physiological side. Horsley has never divided the eighth nerve in cases of obstinate giddiness and tinnitus, believing that **Weir-Mitchellism, Hydrobromic Acid,** and **Anti-Gouty Treatment** have generally succeeded. Dr. Risien Russell, who also took part in the discussion, spoke chiefly of the difficulty of diagnosis and of vertigo due to disease of the cerebellum, disseminate sclerosis, idiopathic epilepsy, etc.

REFERENCES.—[1]*An Objective Audiometer and its Use*, J. F. Bergmann, 1903; [2]*Arch. Otol.*, Aug., 1905; [3]*Trans. of the Seventh Otol. Congress, Bordeaux*, 1904; [4]*Arch. Otol.*, Oct., 1904; [5]*Arch. Otol.*, Dec., 1904; [6]*Brit. Med. Jour.*, Nov. 4, 1905; [7]*Amer. Jour. Med. Sci.*, Sept., 1905; [8]*Arch. Otol.*, April, 1905; [9]*Ibid.*, Oct., 1905; [10]*Ibid.*, Feb., 1905; [11]*Ibid*, Feb., 1905; [12]*Med. Rec.*, March 11, 1905; [13]*Die Otosklerose*, J. F. Bergmann, Wiesbaden, 1905; [14]*Laryng.* July, 1905; [15]*Arch. Otol.*, Aug., 1905; [16]*Lancet*, Dec. 3, 1904; *Trans. of the Otol. Soc. of the United Kingdom*, vol. vi.

ECLAMPSIA. (*See* PREGNANCY.)

ECZEMA.

Norman Walker, M.D.
F. Gardiner, M.D.

In an exhaustive series of papers on the etiology of infantile eczema, Hall[1] deals with the various theories under three groups: (1) Digestive disturbances; (2) External irritations; and (3) A group composed of all the remaining theories, viz., vaccination, dentition, diathesis, etc. From a long series of cases he concludes that neither dentition nor vaccination are with any reason to be considered causative, and as the three events, dentition, vaccination, and infantile eczema, all occur during the first half-year of life, it must frequently happen that they alter the order of their occurrence, and as a result remarkable coincidences take place. He finds no evidence of any inherited diathesis, and none sufficient to support the theory of digestive disturbance or malassimilation as the cause of eczema. His reasons are as follows:—

1. In most of the cases there is no history of any other symptom of digestive disturbance having preceded or accompanied the first appearance of the eruption.

2. Most of the cases have shown no symptom of digestive disturbance during the whole of the period during which the eruption has lasted.

3. Neither rickets nor malnutrition was present in any considerable number of cases.

4. Most of the cases were breast-fed at the time of the first appearance of the eruption. Several were breast-fed alone, others had an occasional biscuit or other food in addition, and only a small percentage were bottle-fed entirely.

5. In most of the cases the same mother had under similar conditions suckled previous children, none of whom suffered from eczema.

6. Only a very small percentage of the whole number of cases

occurred during the three summer months, the period during which infantile gastro-intestinal disturbances are by far the most common.

In favour of an external irritant causation he details the following :—

1. In almost every case the eruption commences on some part of the head or face, and these are the only exposed parts of the infant.

2. The secondary distal eruptions are mostly less severe, and tend to disappear after the original sites recover.

3. There is a comparatively constant age at which the eruption appears, and this is about the time when the infant is first released from the more extreme protection which it has received during the first few weeks of life.

4. There is a greatly increased percentage beginning in the colder months of the year, and this is more prominent in sudden decreases of temperature. Considering the condition therefore as an "occupation eczema," which gets well at the second or third year of life (when the occupation is gone), sooner if efficiently treated, he points out that when an infant is born its surroundings are greatly altered. "It is gaseous instead of liquid, its temperature is considerably lowered, and is no longer constant," consequently the infant's neuro-cutaneous apparatus has to accommodate itself to the new conditions. Its skin also for the first time makes acquaintance with various potential irritants, in the form of soap, micro-organisms, smuts, sweat from the mother's skin, irritating clothes, and towels. "Moreover it must not be forgotten that an infant during its first six months of life has little or no power of localizing or removing any of these irritants. Thus if its clothes tickle and irritate it has no power to remove the local irritant, it can merely cry ; it is too young to scratch." No one can dry our hands and face like ourselves, and an infant has to depend for this on an efficient nurse, not always forthcoming.

The neuro-cutaneous reflexes are more pronounced in a child ; 95 per cent of the cases start on the head and face, which are the least protected parts and most exposed to irritants. He considers that micro-organisms act only secondarily, and defines eczema both in adult and infant as a neuro-cutaneous response to irritation.

Zana Feldstein[2] thinks the whole subject should be treated from the parasitic standpoint. He recognizes only two kinds of eczema, wet and dry, both due to the toxins of staphylococci. The great mistake we have hitherto made is in applying too early in the treatment surface-healing remedies, which have the effect of covering up the disease, only to let it break out again in a more virulent form. Fats are a mistake, especially animal fats. A mixture of **Juniperus Oxycedrus, Stavesacre, Pinus Sylvestris,** and **Eugenia Caryophyllata,** prepared without animal fat, is recommended. This is a parasiticide capable of deep penetration, perfectly harmless to the tissues, and which allays itching almost at once. It should be used in a weak form at first.

C. W. Allen[3] remarks that there is rarely any definite type of eczema ; it is polymorphous and amenable solely to local measures, although digestive disorders affect the condition. Where staining is no objection

he regards 3 to 5 per cent **Methylene Blue** in water as unequalled in intertriginous eczemas. The parts heated are allowed to dry and then covered with collodion. A weak **Resorcin Ointment,** followed by dusting powder, is also well spoken of. In chronic infiltrated areas 50 per cent **Ichthyol** in water allowed to dry on and then covered with **Collodion** is very beneficial, whilst **Oil of Cade** and **Lassar's Paste** are also useful. In infants he regards attention to the scalp as contributing more largely than any other factor to successful treatment. Rubbing is here essential, and a reliable ointment is :—

R	Resorcin	½–1 %	Lanolin	5–10 %
	Washed sulphur	2–4 %	Lard	up to 100

Judging from the effect of **Ecthol** in small-pox, Tyldesley[4] thought that it would perhaps correct the dyscrasia that was present in patients with eczema. He records cures in four cases by giving a teaspoonful internally every three hours, and bathing the parts locally with the same drug every four to six hours. Sabouraud[5] recommends the following for a chronic eruption affecting the backs of the hands :—

R	Ol. cadini	1	Vaselin	50
	Zinc oxide	5		

And where there is a vesicular and pustular condition, Hodara[6] has found the following useful :—

R	Lanolin Vaselin Powdered sugar Zinc oxide	āā 20	Glycerin Sulph.	āā 10

References.—[1]*Brit. Jour. of Derm.* June, July, Aug. 1905 ; [2]*Med. Rec.* Aug. 27, 1904 ; [3]*Ibid.* May 20,, 1905 ; [4]*Med. Brief,* Jan. 1905 ; [5]*Gaz. des Hôp.* Aug. 19, 1905; [6]*Ibid,* July 1, 1905.

ELBOW JOINT (Injuries to). *Priestley Leech, M.D., F.R.C.S.*

Robert Jones[1] has a very good article on injuries to the elbow joint, and contrary to the opinion of many surgeons, does not believe in early motion in cases of fracture about the elbow joint. In doubtful cases of injury to the joint, where the X-rays cannot be used immediately, the following routine method should be employed : extend, supinate, and acutely flex, and keep the arm in an acutely flexed position. He never uses passive movements early, and in fracture keeps the arm acutely flexed for a fortnight ; then he drops the slung wrist a couple of inches, and if in a couple of days the patient can voluntarily raise the wrist back to the old position, leaves it : if not, he acutely flexes the arm again.

Reference.—[1]*Clin. Jour.* Oct. 26, 1904.

ELEPHANTIASIS. (*See* Skin Diseases, Tropical.)

EMBOLISM (Mesenteric). (*See* Mesenteric Embolism.)

ENDOCARDITIS (Infective). *Alfred H. Carter, M.D.*

Sicard[1], after a short *résumé* of the history and pathology of thirty-two cases of ulcerative endocarditis, divides them into the following groups : (1) Four cases due to staph. pyogenes aureus ; (2) Three to

micrococcus lanceolatus ; (3) One case of mixed infection ; (4) Two cases of streptococcal origin ; and (5) Twenty-two cases in which blood cultures failed to give any positive results.

Peebles[2] says that pneumococcal endocarditis forms about 25 per cent of all cases of bacterial endocarditis. It may be of any degree of intensity ; but three-fourths of the cases are of a severe or malignant type.

Horder[3] records two cases of endocarditis, in which the vegetations on the valves and elsewhere yielded cultures of Pfeiffer's influenza bacillus ; also another case of endocarditis, in which the gonococcus was cultivated from the blood. Hunter[4] and Conlow[5] also report cases of gonorrhœal endocarditis.

Coleman[6] calls attention to cases of infective endocarditis which simulate malarial fever in their periodic paroxysmal character. When the disease is approaching, the paroxysms recur more irregularly, the diagnosis in some cases being very difficult. In infective endocarditis there is almost always leucocytosis, the polynuclear cells are increased, whereas in malaria there is leucopenia, and relative lymphocytosis. The presence of malarial organisms in the blood, while it establishes the existence of malarial fever, does not exclude its possible association with infective endocarditis.

French[7], in a paper on the temperature and course of infective endocarditis, aims at establishing the following points :—

1. That in addition to the pyæmic and typhoid types of the disease, there is a third and important one, the cardiac type.

2. That the duration of this is long—months rather than weeks.

3. That it is often difficult to decide whether the cardiac symptoms are due to old fibrosis of the valves, or whether there are fungating masses on the valves as well. That the additional symptoms most suggestive of the latter are—pyrexia, multiple emboli, splenic enlargement, and progressive anæmia.

4. That there is no sharp line of demarcation between simple and infective endocarditis ; so that, whereas some cases of endocarditis are slight, and recover soon, and others are very severe, and die soon, a third group are on the border-line between the two, and may continue doubtful as to their prognosis for weeks and months ; and may even recover when they seemed certainly to have fungating endocarditis.

5. That pyrexia in the ordinary sense is not necessarily present, although the patient is suffering from fungating endocarditis ; in which connection it is most important to remember that the natural body temperature in cases of old valvular heart-disease may be as low as 96·6° F., so that what may be normal temperatures in normal subjects may represent a relative pyrexia.

Serum Treatment.—Horder[8] relates a case of chronic streptococcal endocarditis treated by **Serum** specially prepared by use of the organism obtained from the patient. The failure of anti-streptococcal serum in many cases may, as he points out, be due to various causes. One, and probably a very important one, may be that the serum employed

is not immunized against the particular streptococcus causing the disease, but against a different streptococcus. This consideration involves the question of the unity of the streptococcus as a pathogenic organism—a question which entails too many matters of a purely bacteriological nature to be entered into here. Suffice it to say that streptococci from different sources are often found to show such varied biological characters as to suggest that a serum which has been specifically immunized against one such organism may by no means prove to be immunized against another. To meet this difficulty there have been introduced "polyvalent" sera, obtained by employing streptococci from a variety of sources. But this modification can obviously only decrease somewhat the "hit or miss" character of the remedy.

The ideal serum for the treatment of any particular patient suffering from streptococcus infection must be one obtained by the use of the organism actually causing the disease in that patient. To obtain this ideal serum we have but two alternatives open to us—either we must possess certain trustworthy tests whereby we can recognize the particular streptococcus obtained from the patient, so that we may choose a serum at hand produced by the use of that organism, or we must specially prepare the serum by the use of the very streptococcus which we have obtained in our bacteriological diagnosis of the case. The first alternative is not as yet possible; and the second is only possible when the duration of the disease is long enough to give time to prepare a special serum (about eight weeks). The latter was the plan adopted in the present case; and, though it failed, the record is extremely instructive, as showing that there are important factors in the matter of which we are at present ignorant.

The same author[9] also records a case of pneumococcus endocarditis treated by anti-pneumococcal serum, but without success. The patient was a boy of ten years old. The case was very severe. It began with a pleuro-pneumonia of the right side, and then of the left side, followed by a double empyema, treated by drainage. He was injected with 10 cc. of Pane's serum, No. 2, on the fifty-second, fifty-third, and fifty-fourth days; and again on the fifty-eighth and sixtieth days. He died on the sixty-sixth day. No good result seemed to follow either of the two periods of administration of the serum. The patient was so much exhausted by his disease at the time the serum was used that its failure seemed inevitable. The fact that the leucocyte count amounted to 11,600 only in a pneumococcal infection in a patient aged ten years, showed that the resistance was much lowered. If, as recent researches seem to prove, we are dependent upon the patient's tissues for their reaction to the stimulus provided by a bactericidal serum, that is, if the action is not a direct but an indirect one, it is easily understood why failure should follow the serum treatment in this case.

Spencer[10] reports a case of endocarditis with pericarditis following scarlet fever, successfully treated by anti-streptococcal serum. Two

other cases are recorded[11] of malignant endocarditis treated in the same way with successful results.

REFERENCES.—[1]*Med. Chron.* Feb. 1905 ; [2]*Amer. Jour. Med. Sci.* Nov. 1904 . [3]*Brit. Med. Jour.* April 22, 1905 ; [4]*Ibid*, Mar. 11, 1905 ; [5]*Treatment*, Aug; 1904 ; [6]*Amer. Jour. Med. Sci.* May, 1905 ; [7]*Pract.* Dec. 1904 ; [8]*Lancet*, July 16, 1905 ; [9]*Ibid*, May 20, 1905 ; [10]*Ibid*, Feb. 18, 1905 ; [11]*Med. Press*, April 19, 1905 ; and *Guy's Hosp. Gaz.* April 9, 1904.

ENDOTHELIOMA. (*See* POTATO TUMOURS OF NECK.)

ENTROPION (Senile). (*See* EYELIDS.)

ENURESIS.

G. F. Still, M.D.

Micturition in the first year of life is in the majority of infants, according to Thursfield[1], a reflex act, but by the end of the second year this function should be tolerably well under control ; lapses often occur in the third year, but anything like a frequent occurrence of incontinence is pathological. Many infants can be trained so that at eighteen months they make known their wants in this respect. In Thursfield's statistics, girls outnumbered boys by more than two to one. Diurnal incontinence is less common than nocturnal. Cases in which the bladder is so irritable that it will not tolerate more than a few drops of urine at a time are seen, and the child passes his water at intervals of ten minutes day and night ; but such cases, Thursfield says, are much more frequent in young women of eighteen to twenty years of age than in children. The basis of enuresis is a nervous instability, inherited or acquired. The exciting causes may be grouped as follows : (1) Affections of the nerve centres in the brain, such as epilepsy ; (2) Reflex irritation of spinal centres by such peripheral irritants as worms ; (3) Irritation of the bladder by acidity of the urine and bacterial products. Clemens[2], however, groups the commonest causes of enuresis in this order : (1) Hyperacidity of urine : day and night enuresis ; (2) Adenoids : nocturnal enuresis only ; (3) Chronic interstitial nephritis : day and night enuresis ; (4) Alkalinity of urine, due to fixed alkalies : day and night enuresis.

As to the part played by adenoids in the production of enuresis, there is certainly room for wide difference of opinion. If their presence caused the enuresis their removal should stop it. Ostheimer and Levi[3] report that out of eight cases with adenoids, six had the usual operation for removal of adenoids performed, but in none of them was there any more than temporary improvement in the enuresis.

It has been suggested by Beilby[4] that there is some causal relation between masturbation and enuresis. Rey[5] attributes many cases of enuresis to certain easily overlooked changes in the urine. In girls particularly a latent cystitis due to bacillus coli is frequent ; the child is pale, miserable, and irritable, without any noticeable local symptoms. In other cases a simple mucous cystitis is found, the urine contains mucus, epithelial cells, and some leucocytes. This form is met with particularly in badly nourished, badly fed, and rickety children. This form is commoner in boys than in girls. The odour of the urine is

commonly ammoniacal in these cases, contrasting therein with the heavy offensive smell of the urine in the coli-cystitis cases. Less often phosphaturia gives rise to frequent micturition or enuresis.

TREATMENT.—Thursfield (loc. cit.) says that in nearly all cases prolonged treatment is necessary, because the tendency to relapse is marked. Even if successful the treatment should be continued for three months, and the child should be kept under constant observation for another three months. Sometimes twelve or eighteen months of constant treatment will be necessary. The child should empty its bladder at bed-time, and should be awakened one to one and a half hours after it has gone to sleep to micturate again, for enuresis usually occurs within the first two hours of sleep. The last meal and last drink are to be taken at least an hour before bed-time, and should be small in quantity. Tea, coffee, and sugar and sweets are considered by Thursfield to be particularly harmful. The child may have as much liquid as it desires, provided it is taken at regular times, and limited to a small quantity at the last meal. He does not object to meat or any other ordinary food. Lewis[6] on the contrary maintains that the most essential part of treatment is, in most cases, a rigid **Anti-diabetic Diet.** The only relaxation of this may be at breakfast when some starchy food may be allowed. Bread is particularly to be avoided under this regimen; the enuresis in most cases ceases in a few days. A tonic is given at the same time, and after three or four weeks the child is usually able to return to ordinary diet.

Rey (loc. cit.) recommends, in the rare cases where enuresis is due to hyperacidity of the urine with uric acid sand in it, the adoption of a purely **Vegetable Diet**; and in general, where no obvious cause for enuresis is to be found, he recommends a diet diametrically opposed to that so strongly advocated by Lewis. Rey's formula is four or five meals in the day of bread and milk, or porridge and milk, and nothing else, especially no fruit and no sweets. Rey gives at the same time a mixture of **Condurango** and **Hydrochloric Acid.** For the cases in which there is coli-cystitis or mucous cystitis, which Rey finds to be very frequent, he has found the administration of **Salol** after meals most effectual. For the cases with alkaline urine, where the alkalinity is due to fixed alkalies, and not to any inflammatory or septic condition, Clemens recommends the use of **Acid Sodium Phosphate.** Where the urine is over-acid, Ostheimer and Levi give **Citrate of Potash.** They use also tincture of **Belladonna** in increasing doses until ℥xv is reached. If then unsuccessful, it is given up, and the aromatic **Tincture of Rhus** is tried, increased gradually up to ℥xxx daily. If this fails they use $\frac{1}{240}$ gr. of atropine with half that quantity of strychnine, and increase these doses gradually until the full physiological effect is produced, or the enuresis relieved. Thursfield, in a series of thirty cases treated with **Urotropin,** had nine successes. **Electrical Treatment,** with faradic current, one pole in the urethra and one on the abdomen or back, and a few "make and break" shocks of the constant current, was successful, according to Thursfield, in some cases.

Recently various Continental writers have practised "epidural injections," i.e., injections of normal saline solution into the sacral canal, below the termination of the dural sac, and for wanton cruelty one can hardly imagine anything more ingenious; any shock, whether it be of punishment, or operation, of any sort, does act as a powerful inhibitive in many cases of enuresis, but whether in order to produce such a moral effect it is necessary to inflict such abominations upon children as "epidural injections," or injections of salt solutions into the retro-rectal connective tissue as practised by Revel, or such questionable procedures as massage of the sphincter vesicæ by the finger in the rectum, is a question which most medical men will probably answer by disregarding such methods entirely.

References.—[1]*Clin. Jour.* Oct. 11, 1905; [2]*Arch. Ped.* Mar. 1905; [3]*Med. Rec.* Dec. 24, 1904; [4]*Amer. Med.* Mar. 5, 1904; [5]*Pediatr.* Dec. 1904; [6]*Brit. Jour. Ch. Dis.* Feb. 1904.

EPILEPSY. *Purves Stewart, M.D.*

During the epileptic fit (which, by the way, except in hospitals or special epileptic institutions, the physician is rarely fortunate enough to witness at the time), little is usually to be done for the patient, beyond preventing him from injuring himself, whether by biting his tongue, by rolling into water where he might drown, or by other accidents which might befall an unconscious patient. The asphyxiated appearance of the complexion during the tonic stage of the fit necessitates the loosening of all tight clothes about the neck or trunk. Sizaret[1], of Rennes, bearing in mind the tendency which carbonic acid has of itself to produce or augment epileptiform fits, tried the effect of **Inhalations of Oxygen** during the stage of epileptic asphyxia, on various asylum epileptics, when he happened to be present during severe fits. In every case, not only was the cyanosis at once relieved, but the fit itself was cut short, even in old-standing and inveterate epileptics. In chronic epileptics who have frequent fits, it may therefore be of value to remember these observations, and to keep a cylinder of oxygen at hand, with instructions to the nurse or attendant how to apply it. In any case, no harm can be done, and the fit may be, for the moment, cut short.

Reference.—[1]*Progrès Méd.* Aug. 12, 1905.

ERYSIPELAS. *Norman Walker, M.D.. F. Gardiner, M.D.*

Graham[1] recommends painting with **White Lead** all over the affected part and beyond the advancing margins. The action, he considers, to be entirely that of an air-proof coating; only one or two applications are necessary. The white lead must be thick enough to prevent it running, and yet thin enough to be painted on, after which it must be untouched for 10 or 12 hours, at the end of which time it will be dry. The scalp is not suitable for such treatment, and where the skin is broken or scratched it cannot be applied.

Wherry[2] finds he gets best results from **Nitroglycerin** $\frac{1}{100}$ grain every three hours. All his cases showed a reduction of temperature, moist skin, good appetite, steady pulse, and after the first day there was a noted absence of prostration and a rapid disappearance of the inflammatory process. He wisely combines this with an **Ointment of Ichthyol** and **Oxide of Zinc,** which, however, he considers only soothes the skin. Waldo[3] uses **Alcohol,** 96 per cent, applied on wool or gauze, or in a jelly of 60 per cent spread on and covered with batiste.

Ayer[4] with an injection of 10 or 20 cc. of **Antistreptococcic Serum** has produced striking effects, but these were not uniform. In favourable cases the patient's general condition was often greatly improved at the end of a few hours. The mortality was 14·75 per cent, of which only 1·25 per cent was due to erysipelas itself, the rest being due to complications.

Uniform success is claimed by Davis[5] who considers that failures from antistreptococcic serum are due to insufficient doses.

Fornace[6] took advantage of an epidemic in Turin to obtain serum from convalescents. This was immediately injected in other cases, and thus he was able to compare the results with those of the ordinary treatment. For the most part cases treated by local applications and by general measures directly adapted to sustaining the strength of the patient last from nine to fifteen days, with high temperature and serious illness. Nine serious facial cases under observation for twenty-four hours were chosen for serum treatment; 10 to 50 cc. were given, and the total in each case was from 20 to 90 cc. injected between the third and eleventh day. The result was that in 7 out of 9 cases the temperature fell and the patient generally was much improved, but the local condition was not affected. He experimented also with blood serum of convalescents and cultures of streptococci, and concludes that the serum has no bactericidal effect, but diminishes the virulence of the organism. Six cases showed albuminuria, and with it the presence of streptococci in the urine.

The outcome of these researches on the part of four observers is to confirm one's belief that in erysipelas we at least have a valuable adjunct to treatment in antistreptococcic serum. Further work will probably establish the dosage, method of administration, and proper preparation of the serum, and then we may look for still better results.

In May, 1905, Rona from an experience of 5,000 cases formed the belief that no remedy had any effect on this condition, but Kaczvinszky[7] although his cases only number 70 to 80, considers that in the proper administration of **Quinine** we have a certain cure. He gives ·2 gramme of quinine hydrochlorate (3 grains) every six hours, and gets a cure in five days. If vomiting ensues he gives it by subcutaneous injection with similar results. He admits his results may be exceptional, but has tried to eliminate all fallacies, and Liebermeister's failure after a year's trial with 3 grains of quinine two-hourly he attributes to too large doses. During the first days he alleviates the pain and dis-

comfort by cold applications. Finally, he gives ·25 gramme of quinine every six hours until two or three days after feverishness has disappeared.

REFERENCES.—[1]*Med. Jour. N.Y.* July 15, 1905; [2]*Med. Rec. N.Y.* Nov. 5, 1904; [3]*Med. Press and Circ.* Oct. 19, 1904; [4]*Med. Rec. N.Y.* Mar. 4, 1905; [5]*Therap. Gaz.* Dec. 1904; [6]*Il Policlin.* July, 1905, *Brit. Med. Jour.* Oct. 7, 1905; [7]*Ungarische Mediz. Presse, Nov. 6,* 1905.

ERYTHEMA. *Norman Walker, M.D.*

Schamberg[1] in a paper published towards the end of last year, concludes that nearly all cases of scarlatinoid erythema, morbiliform erythema, erythema multiforme, erythema nodosum, urticaria, and purpura are the result of circulatory poisons. He summarizes these poisons under four heads: (1) Bacterial and protozoal poisons; (2) Ptomaines: (3) Leucomaines and other metabolic poisons; (4) Drugs. The apparent exception of nervous cases can, he holds, be explained by considering them as resulting from metabolic poisons.

Blair[2] records a case of erythema exsudativum in a lad of twelve where the mouth and throat were affected with membranous stomatitis. Four similar attacks took place within about two years. Vesicles, bullæ, and erythematous spots broke out over the extensor aspects of the body. The eruption in the mouth, which seemed to come out in successive crops, generally appeared about a week before the skin eruption. This latter fact seems very important, as pointing to a possibility of absorption of toxins. No distinct blood changes were found, and only staphylococci and streptococci were discovered in the mouth.

Monro[3] records two cases associated with unilateral convulsions, the convulsions in both cases preceding the skin eruption by some days.

Galloway[4] showed at the London Dermatological Society a case of persistent exudative erythema in a woman of thirty. The eruption, which lasted some months, gradually increased in area until a large part of the face was involved. When it vanished there was no appearance of scar left. There was a history of chilblains, but no evidence of visceral disease. The case was considered as closely allied to lupus erythematosus, and for treatment **Salicin, Salol,** and **High Frequency Currents** were suggested.

Erythema Induratum (Bazin).—Whitfield[5] believes that there are two well-defined types of this disease, one tubercular and the other non-tubercular, the latter occurring usually, though not invariably, in older patients than the former, running a more rapid course, showing less tendency to ulcerate, and causing more pain. Harttung and Alexander[6] summarize a histological examination of five cases with the statement of their belief that erythema induratum is a tuberculous affection of the skin of hæmatogenous origin and essentially an arterial embolic condition.

Erythema Iris.—Plate XXI is a very good representative of a well-marked case of this disease. The cast was taken by Dr. Shennan during the second attack. Under **Salicin** the patient rapidly recovered.

Erythema iris.

Erythema Scarlatiniforme of influenzal origin is illustrated by six cases in a paper by Hamilton[7]. The cases, as the name suggests, were very like scarlet fever. The eruption on the skin and fauces appeared two days after a rise of temperature, and the submaxillary glands were enlarged in all cases. Succeeding years with their quota of cases all tend to confirm one's opinion that, with the exception of erythema induratum, the treatment must consist in searching for and removing the cause of systemic toxæmia.

REFERENCES.—[1]*Jour. of Cut. Dis. including Syph.* Oct. 1904; [2]*Med. Research, N.Y.* May 7, 1904; [3]*Brit. Med. Jour.* May 17, 1905; [4]*Brit. Jour. of Derm.* Aug. 1905; [5]*Ibid*, July, 1905; [6]*Arch. für Derm. und Syph.* Sep. 1904; [7]*Brit. Med. Jour.* Jan. 21, 1905.

EXTRA-UTERINE GESTATION. (*See* FALLOPIAN TUBE.)

EYE (Diseases of). (*See* CONJUNCTIVA, CORNEA, CILIARY BODY AND IRIS, GLAUCOMA, LENS, MOTOR APPARATUS, OPTIC NERVE, REFRACTION, RETINA AND CHOROID.)

EYE (General Therapeutics of). *A. Hugh Thompson, M.D.*

Of the newer organic salts of silver, **Protargol** has for some years won its way into general esteem. **Argyrol** is said by Darier[1] to be superior to protargol in every respect. It contains 30 per cent of metallic silver, whereas protargol only contains 8 per cent, and while protargol does cause some little pain, argyrol is absolutely painless even in a solution of 20 per cent, and can safely be entrusted to patients for use at home. Further, it is said to be more efficacious than protargol. Darier recommends its use (1) As a routine measure for the prevention of ophthalmia neonatorum—a few drops of the 20 per cent solution. (2) In the treatment of purulent conjunctivitis, a 25 per cent solution *every half hour*, in addition to which the eyelids and lashes may be disinfected by brushing them with a protargol solution so as to form a lather. He adds a caution against discontinuing the treatment too soon; in a serious case of gonococcal ophthalmia it should never be assumed that the patient is cured by the eighth day. (3) In simple conjunctivitis.

Wherry[2] also treats his cases of purulent conjunctivitis at Addenbrooke's Hospital, Cambridge, with argyrol successfully, and in other hospitals its use is gradually gaining on that of the older remedies. Stephenson[3] strongly recommends its use, not only in gonococcal conjunctivitis, but in ulcerative blepharitis, as an injection in the form of a 15 per cent solution in suppurative lacrymal affections, and in the catarrhal ophthalmia of elderly people accompanied by marginal ulcers of the cornea, also in the form of a 2 per cent ointment in phlyctenular conjunctivitis and keratitis. The only form of conjunctivitis in the treatment of which argyrol has disappointed him is in the chronic or subacute form due to the Morax-Axenfeld diplobacillus, the so-called "angular blepharitis."

Largin, another synthetic silver compound, is spoken well of by Stephenson[4], not for gonococcal ophthalmia, but for the ordinary

acute contagious ophthalmia due to the Koch-Werks bacillus. He employs a 10 per cent solution. For the blepharo-conjunctivitis of poorly-nourished children a weaker solution (3 per cent) is effective. It has been claimed that largin does not stain the conjunctiva after long-continued use, but this claim is not confirmed by Stephenson's experience. This disadvantage is attendant apparently upon the prolonged use of any of the silver salts, organic as well as inorganic, in spite of claims made to the contrary.

It must not be assumed that ophthalmic surgeons generally have given up the use of **Nitrate of Silver** in favour of the organic salts. Many of them still use it exclusively, and there are few who, in an obstinate case of purulent conjunctivitis which did not respond very rapidly to the newer remedies, would not fall back on the older one, which has stood the test of so many years. The objections to it are the violence of the reaction that, in strong solutions, it sets up, and the pain which its use inflicts.

Stovaine.—The value of this new anæsthetic has been tested by De Lapersonne[5]. Its toxic properties appear to be less than those of cocaine. On the other hand it is somewhat more painful, and the anæsthesia produced not so complete. The combination of cocaine and stovaine, however, in equal parts, for instillation into the conjunctival sac, seems to be excellent. But the chief value of the new anæsthetic is for subconjunctival or subcutaneous injection, either for strabismus operations or for operating upon the lids. For this purpose its low degree of toxicity renders it superior to cocaine. The only disadvantage that is apparent is that it has a vaso-dilator action, so that in some cases hæmorrhage might be more difficult to control. It might, however, well be employed in the operation of expression for trachoma in a way recommended by Guttman, of New York[6], for cocaine. After instillation in the conjunctival sac in the ordinary way, he recommends that a weak solution of the anæsthetic (1 in 1000 of cocaine) be injected by a fine needle into the retro-tarsal fold, 4 or 5 drops at a time, until some 20 drops have been injected, after which the use of the expression forceps is nearly painless.

Stovaine can be sterilized by heat, which cocaine cannot, but in this it has no advantage over its rival, eucaine. Stovaine "forms part of a series of bodies found by Fourneau in the group of amino-alcohols of tertiary alcoholic functions[7]." Its discovery "is the result of a systematic course of research, in order to determine the respective importance of the different chemical groups in relation to their anæsthetic properties."

For slight operations, in which general anæsthesia is more suitable than local—for nervous patients and young children—**Ethyl Chloride** is growing in favour and gradually replacing nitrous oxide gas. Even excision and evisceration of the eyeball have occasionally been performed under its influence[8]. (*See* ANÆSTHESIA.)

Hansell[9] attests the value of **Active Diaphoresis** in the treatment of acute inflammatory affections of the eye, and more especially of the

uveal tract Formerly he employed **Pilocarpine** injections for this purpose, but he now finds that the hot-bath method without the administration of any drug is sufficient in the majority of cases. After ten minutes in a hot bath, the patient is put to bed between blankets, with hot-water bottles along his sides, and an ice-cap on his head. Should the sweating be delayed or interrupted, it may be hastened by drinking a cup of ice-water.

Stephenson speaks of the value of **Aspirin**, given in liberal doses (grs. xv to xxx every few hours) in rheumatic irido-cyclitis and other affections of the eye associated with rheumatism, namely, episcleritis, and a form of conjunctivitis without appreciable discharge which is apt to come on suddenly after exposure, and to disappear as suddenly.

The treatment of corneal ulcers by **Quinine**, which has for many years been well known, is strongly recommended by Lawson[10]. He uses a 1 per cent solution of the sulphate, with just sufficient acid to hold it in solution.

Painblan and Taconnet[11], of Lille, in the course of an epidemic of small-pox, treated 48 cases in which the eyes were affected, with a solution of **Methylene Blue** 1–500, and subsequently 1–300. In not one case of conjunctivitis treated from the start in this way did the trouble spread to the cornea.

Fig. 31. Artificial Vitreous.

An improvement on the **Artificial Vitreous** made of metal or glass, for use after excision of an eyeball, is employed by Landman in America, and Rolston in England[12]. The chief advantages claimed for these wire cages are that their retention within the tissues is ensured by granulations springing up between the meshes, and that they are very light. They are made in three sizes, as in the illustration (*Fig.* 31), and of pure silver wire.

References.—[1]*Ophthalm.* Jan. 1905; [2]*Lancet*, May 27, 1905; [3]*Med. Press*, May 24, 1905; [4]*Ibid*, Dec. 21, 1904; [5]*Ophth. Rev.* 1904, p. 267; [6]*Ibid*, p. 278; [7]*Ophthalm.* March, 1905; [8]*Ibid*; [9]*Ther. Gaz.* May, 1905; [10]*Brit. Med. Jour.* Feb. 4, 1905; [11]*New York Med. Jour.* July 2, 1904; [12]*Lancet*, Aug. 20, 1904.

EYE (Injuries to). *A. Hugh Thompson, M.D.*

In the *Medical Annual* for 1904 a brief description of Haab's method of extracting pieces of steel from the eye by means of his giant magnet was given. In last year's *Annual* the method of localization of these bodies by means of the X-rays was referred to. In a full account of his method by Haab[1] which he has recently published, he refers with approval to a modification introduced by Lang[2], at that stage of the operation when the fragment of steel is behind the iris, and does not at once come forward into the anterior chamber on the application of the giant magnet "A steel spatula made for me by Weiss, in the form of a spud but with a rounded end," says Lang,

" is passed between the lips of the corneal section across the anterior chamber, through the pupil and between the iris and the anterior lens capsule. An assistant now connects the base of the spa ula by means of a few strands of soft iron wire twisted into a rope, with Haab's magnet, which is brought close to the patient's eye ; the spatula is withdrawn with the foreign body adhering to its end."

The superiority of Haab's method over the older ones of using a hand magnet after an incision through the sclera, i still contes'ed by many ophthalmic surgeons, e.g., Hirschberg in Germany, and Snell[3] in England. Their objections to Haab's method are that the longer passage of the foreign body through the vitreous may lead to subsequent detachment of the retina ; that if the operation is not successfully performed, the piece of steel may become entangled in the ciliary body, which would be a very dangerous complication, and that the lens or iris may be injured in its course to the anterior chamber ; further, that the instrument is both cumbrous and expensive, and can hardly be available except in hospitals and in large industrial centres. On the other hand the objections to the older method of employing a hand magnet are chiefly the risk of infection through the wound in the sclera, and the introduction of the tip of the magnet ; and secondarily, the risk of mechanical injury to the retina, choroid, and vitreous, which may involve immediate hæmorrhage or subsequent detachment of the retina. There is no doubt that good results are obtained by each method ; nor, on the other hand, that probably about one quarter of the eyes operated on by either have subsequently to be excised. It is evident that further experience is needed on this subject. On one point there is a consensus of opinion, viz., as to the extreme danger of leaving any eye alone which has a piece of steel inside it. This used not infrequently to be done, and many instances have been recorded of eyes remaining healthy for many years after such an accident. Further observation seems to show, however, that even in these cases they ultimately go blind if the patient survives, unless the foreign body is so encapsuled by fibrous tissue as to be practically shut off from the cavity of the eye. Otherwise, sooner or later a process known as *siderosis bulbi* takes place, which is thus described by Marple[4]. " The iron is dissolved by the carbonic acid gas of the tissues, and the solution is diffused as a double carbonate of iron and precipitated in insoluble form by the oxygen supplied by the arteries. The iris becomes discoloured a rusty brown, sometimes the cornea is discoloured, as well as various layers of the lens. But the changes most disastrous to vision are those of the retina, which becomes degenerated, especially if the foreign body is in the vitreous." In the discussion of the paper from which the foregoing is an extract, De Schewinitz[5] made a very important observation, viz., " that in several cases of traumatic cataract which had come under his care during the last few years, the X-rays had revealed a foreign body in the eye, of which the patient was ignorant, and that in these cases he had removed the foreign body before extracting the cataract. This

observation suggests the importance of first examining all these cases of traumatic cataract with the X-rays, so as to discover whether or not a foreign body is in the interior of the eye."

Unilateral amaurosis resulting from *blows on the head* may be due to a fracture involving the optic foramen, or they may be due to hæmorrhage into the optic nerve sheath. Jameson Evans [6] describes five cases of a more or less severe blow on the temple, causing temporary impairment of vision in the eye of the same side, and permanent loss of the temporal half of the field of vision of the same eye. This sequence of events could hardly be due to either of the above causes. His theory of what happens is this: "The nerve on the side of the injury is driven against the inner boundary of the optic foramen, whilst the nerve on the opposite side is driven against the outer wall of its foramen. That the nerve on the opposite side does not get bruised is in the main due to the protection given to it by the ophthalmic artery which winds round its outer side from below. Assuming such an immediate cause for the symptoms mentioned, the course and prognosis of the cases can easily be deduced. A certain number of fibres are permanently destroyed (functionally) at the time of the accident. The more centrally-placed fibres are not so extensively damaged, and partly recover their function, as shown by the improvement in central vision. The atrophy of the nerve is apparently not progressive, and no increase in the limitation of the field need be feared."

REFERENCES.—[1]*Ophthalm.* Feb. 1905; [2]*Royal Lond. Oph. Hosp. Rep.* 1903, p. 296; [3]*Ophthalm.* Feb. 1905; [4]*Med. Rec.* Jan. 25, 1904; [5]*Ibid*; [6]*Brit. Med. Jour.* July 8, 1905.

EYELIDS (Diseases of the). *A. Hugh Thompson, M.D*

The eyelids afford an apparently inexhaustible field for the ingenuity of the operating surgeon. Unfortunately the reason is that such a small proportion of operations actually practised give permanently satisfactory results. Of operations for *ptosis* those most generally practised in England aim at throwing the work of elevating the upper lid on to the occipito-frontalis, either by means of an artificial tendon [1] or by means of scar tissue (Hess's operation [2]). De Lapersonne [3] suggests a method of actually advancing the levator muscle itself, and Parinaud [4] has devised a new method of utilizing the superior rectus. It "consists essentially in the passage of a thread in such a manner that the rawed upper edge of the tarsal cartilage is brought into contact with the superior rectus muscle, with the result that eventually organic union between the two is established." Two disadvantages of expecting the superior rectus to do double work are pointed out by Harman [5]: (1) The danger of diplopia; and (2) The danger of exposing the eye during sleep when the eyeball is rotated upwards.

Entropion of the upper lid, with Trichiasis, following trachoma, is another condition the treatment of which is commonly unsatisfactory. The operation practised by Barrett and Orr [6], for many years past in Australia, where trachoma is endemic, merits the consideration of all surgeons whose lot it is to treat these cases. The full description

should be read, but its main principles are: (1) The suturing of the cut edge of the skin adjoining the cilia to the upper portion of the tarsus; (2) The almost complete separation of this portion of skin, along with the lashes and their roots, from the lower portion of the tarsus, so as to allow a certain amount of sliding; and (3) The temporary union of the posterior flap containing the tarsus with the lower lid by means of gut sutures.

Senile entropion of the lower lid is not commonly such a difficult matter to treat, but McMillan[7] finds the following operation more satisfactory than the usual one of excising an elliptical piece of skin from the lower lid:—

"The outer canthus being split and the incision extended outwards from A to B (*Fig.* 32), a triangular-shaped piece of skin, A C B, with its base formed by the lower margin of the incision, A B, is removed, a small piece of the margin of the lower lid at A being also subsequently removed. Horse-hair sutures are now passed from side to side to close the opening A C B. Three will be sufficient, an additional one being passed from the border of the lower lid at *a* to the skin above the primary incision at *b*, if thought necessary. The lid is thus tightened up by being drawn outwards, and the eyelashes are everted. There is no resulting deformity following the operation."

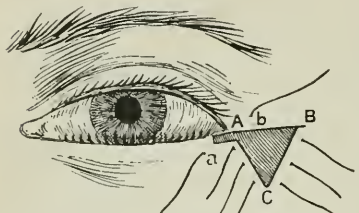


Fig. 32.—McMillan's Operation.

Blepharitis.—The following remarks from Harman's book[8] are valuable: "In studying the causes of this disease there are to be noted three outstanding features:—

"1. The subjects of the affection are most frequently possessed of skins and hair which are both thick and coarse. They are folk who either exhibit, or are found to be liable to, 'black-heads,' pustules, acne, and seborrhœa. There is thus a susceptible *soil.*

"2. The subjects of the affection will, on the objective examination of their refraction, most commonly be found to show an error, generally of an astigmatic variety. There is in this factor a preparation of the soil.

"3. Lastly, there is the never-failing presence, in even the cleanliest of persons, of pyogenic organisms about the lid margins—always the staphylococcus pyogenus albus, very often the staphylococcus pyogenus aureus, and not infrequently other organisms in addition. In twenty children with healthy eyelid margins bacteriological examination demonstrated large numbers of organisms in each case. There is then plenty of seed ready to hand for sowing.

"The seed will flourish in direct proportion to its plentifulness, that is, in proportion to the dirtiness of the child's surroundings and person."

References.—[1]*Med. Ann.* 1905, p. 267; [2]*Ophth. Rev.* 1894; [3]*Ibid*, 1904, p. 56; [4]*Ibid*, p. 295; [5]*Ibid*, 1903, p. 286; [6]*Ophthalm.* 1904, p. 354; [7]*Ibid*, Mar. 1905; [8]"The Conjunctiva in Health and Disease."

FÆCES (Examination of). *Robt. Hutchison, M.D.*

J. Strasburger[1] emphasizes the importance of systematic examination of the fæces in the clinical study of diseases of the digestive organs. The observations of the patient are little to be relied on. He insists on the patient bringing some of the fæces in a wide-mouthed bottle provided with a patent stopper, which he lends the patient for the purpose. Since the constitution of fæces varies widely according to the diet, he finds it advisable to prepare his patient by giving a diet consisting of milk, bouillon, eggs, oatmeal, meat, butter, and sugar, in definite quantities. This diet is kept up for several days until the fæces, which are coloured by giving a tablet of carmine on the first day, lose their red colour. The systematic examination consists in a macroscopic and a microscopic examination; elaborate chemical and bacteriological tests are only required in rare cases.

He first deals with the frequency of the motions. Vegetable diet produces a larger quantity of fæces, and on account of the richness in bacteria, exerts a more powerful stimulation on the intestinal wall, and thus a more frequent motion than animal diet. Whether the number is within the limits of health must be decided in each case, but, as a general rule, one may assume that copious infrequent stools indicate trouble in the upper portions of the intestinal tract, and sparse frequent stools disturbances in the lower segments. Next the consistence and size of the fæces must be noted. In the various "hunger" conditions—such as stenosis of a portion of gut with contraction of the rest, spastic contraction of the gut, etc.—the motion is very narrow—"pencil motion." The colour must also be noticed. This varies according to the form of diet, and may be changed by various medicaments. Fermenting motions, containing gas bubbles, are usually quite pale, while decomposing motions are dark. Clay-colour stools occur when bile is absent, and also when leucorubin takes the place of hydrobilirubin. This can be recognized by treating the motion with acid alcohol, which will extract hydrobilirubin. When blood is present in small quantities it is only detectable by the spectroscope or by chemical means. One must be careful to distinguish blood which was contained in the food; while the dark colour of melæna must be carefully distinguished from the dark coloration due to bismuth or iron. The smell of the motion also may be of clinical importance.

The next point to be noted is the reaction. This should be tested after it has been well stirred up. Normally fæces vary from faint acidity to faint alkalinity. Markedly acid stools indicate fermenting processes; and contain volatile fatty acids. The acidity of the fæces may be due to fixed acids, and is then associated with an increase of fats. Alkaline reaction when marked occurs when there is decomposition in the intestinal contents. It will be found necessary to examine small pieces in the fæces; usually the "stool sieve" is used, but the spiral wire, described by Gruetzner, and which is used with alcohol, will be found very serviceable. By working up a portion of the motion

one can detect small particles of undigested matter and the like, and from their nature and quantity form conclusions as to the process of digestion. Portions of connective tissue indicate disturbance of the stomach; the search for remains of muscle will give information as to the capability of digesting meat. When the microscope reveals many particles of muscle, with sharp edges and distinct striation, the digestive disturbance is chiefly in the small intestine; this is confirmed if the fibres are of a golden yellow colour (due to bilirubin) instead of a brownish-yellow colour (due to hydrobilirubin), as is normal. Mixing a small quantity of fæces with a concentrated watery solution of perchloride of mercury in a mortar, after standing for a day all substances containing hydrobilirubin will be coloured red, while all containing bilirubin will be seen to be green. Starch is next to be sought for, and is best detected by means of Lugol's solution. Fats occur in many different forms in the motions, and must be sought for carefully, since in adults—save when castor oil has been taken—no fats are found normally. Mucus can be recognized under the microscope, especially if one adds acetic acid. Mucus when recognized in the motion points to a catarrh in some portion of the intestine, and roughly the catarrh is in the large gut when the mucus is recognized macroscopically, and in the small intestine when it is only detected microscopically. One learns more by noticing whether the mucus is intimately mixed with the fæcal material, and whether there are many cells associated with it. Blood and pus must be carefully looked for, and one must bear in mind that the red corpuscles may not be sufficiently preserved to be recognized under the microscope when the source is high up in the small intestine.

Strasburger next deals briefly with the detection of bacteria and animal parasites. He points out that the comparatively mild affections due to staphylococci may be readily distinguished by means of the microscope from the more dangerous infections due to streptococci. Typhoid, cholera, and dysentery bacilli can only be detected by culture; but tubercle bacilli may be demonstrated with comparative ease on cover-glass preparations. The amœbæ of dysentery or certain forms of enteritis can be seen under the microscope in fresh stools, but one must be careful not to press the cover-glass firmly on to the slide, and also to keep the slide warm, if one wishes to recognize their movements.

Ury and Alexander [2], on the basis of a number of cases and a general survey of the literature, point to the importance of careful examination of the fæces in suspected disease of the pancreas, yet emphasizing the reserve which must be exercised in interpreting the results. There are three possibilities in reference to abnormal fat content of the fæces in pancreatic disease. There may be an increased amount of fat with diminished fat splitting, and increased amount of fat with normal splitting, or a normal amount of fat with diminished splitting. It is of great importance in these estimations to regulate accurately the amount and character of the ingested food. Fat kept

within the bounds of assimilation is normally well utilized (7 per cent to 10 per cent loss), and the limit is high, reaching, with individual variations, about 350 grammes for butter. The tolerance for fats is much diminished in disease of the pancreas, and the limit of assimilation relatively low, so that by carefully regulating and changing the diet, defects in pancreatic secretion might be recognized at an early stage. Conclusions from the amount of fat in the stools can, however, only be drawn under the following conditions: There should be no jaundice, as absence of bile may of itself cause steatorrhœa; the fat should not be administered emulsified, and there should be no diarrhœa. If diarrhœa be present, it may be checked with opium. Even under these precautions the results are only of value in diagnosis when they are considered in relation to other symptoms. Marked steatorrhœa may occur in disease of the small intestine, and in diseases interfering with the flow of fat through the lacteals, as enlarged mesenteric glands and tuberculous peritonitis. On the other hand, one meets with cases of almost complete destruction or atrophy of the pancreas, in which fat digestion is perfect. What Ury and Alexander consider almost pathognomonic of pancreatic disease is the discharge of large quantities of liquid fat after the solid or formed fæces have been passed. Most cases of steatorrhœa are associated with an excessive number of well-preserved muscle fibres in the stool, although either condition may occur without the other. Muscle fibres, of course, occur in normal stools, and to recognize an azotorrhœa, not more than one-half pound of tender meat a day should be allowed. The significance of this condition is likewise relative, as it occurs in various affections disturbing the movements, secretion, and absorption of the small intestines. A third point of some importance is the evacuation of relatively large quantities of solid fæces. Nobel thought the absence of the products of putrefaction was an important diagnostic aid, but Ury and Alexander found a normal amount of aromatic oxy-acids in their cases. In diabetes, as a rule, fat and proteid digestion are well preserved, but in certain cases with marked steatorrhœa and azotorrhœa, extensive involvement of the pancreas has been correctly diagnosed.

REFERENCES.—[1]*Berl. Klin.* April, 1904; *Brit. Med. Jour.* Aug. 20, 1904; [2]*Deut. Med. Woch.* 1904, xxx, p. 1311.

FALLOPIAN TUBE. *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*
Victor Bonney, M.S., M.D., B.Sc., F.R.C.S.

Primary Cancer of the Fallopian Tube.—Alban Doran[1], in an important paper, has exhaustively reviewed the pathology and symptomatology of this rare condition, and gives a table of over fifty cases. The bulk of them occur between forty-five and sixty years of age, and the form of growth is most commonly a malignant papilloma. There are two symptoms in these cases which, though not by any means always present, are valuable aids in their diagnosis when occurring together. These are *ascites*, coupled with a *sanious watery discharge*—

often intermittent—from the uterus. Ascites may be due to the presence of secondary peritoneal growths, but in some cases it is apparently due to continued patency of the abdominal ostium, and the escape from it into the peritoneum of a watery (and probably irritant) discharge. The discharge from the uterus is due to a distention of the tube behind the growth, with a watery blood-stained fluid, which intermittently or continuously escapes from the uterine ostium. If both ends of the tube be occluded these symptoms will probably be absent. Primary cancer of the Fallopian tube may be strongly suspected when these two symptoms are associated with a tumour in the region of the tube in a woman between forty and sixty years of age. Salpingitis appears to have preceded the development of the growth in a good number of cases.

The treatment is, of course, immediate operation ; but the prognosis, according to Doran, is a bad one—over a quarter of the patients being dead or dying within a year of the operation.

Tubal Pregnancy.—The last few years have seen great advances in our knowledge of the more minute anatomy of tubal gestation. Most of this work has been done by German workers, who in this respect have been much in advance of our home authorities. Russell Andrews'[2] paper read before the London Obstetrical Society was the first in which these new views were placed before us. In this paper the author showed that the site of the early developing ovum in tubal gestation was not, as heretofore held, in the lumen of the tube, but in a sac in its muscular wall. Comyns Berkeley and Victor Bonney[3], working on a series of specimens of nineteen days' duration and upwards, have entirely confirmed this.

It is well known how extremely variable are the symptoms associated with tubal gestation, and it cannot be sufficiently impressed that the condition is associated with *no* symptoms beyond those of normal pregnancy, until rupture of the sac (gestation sac) containing the growing ovum occurs. The two last-named authors have specially studied the varieties of rupture of the primary gestation-sac in these cases, as distinguished from the rupture of the *secondary* gestation-sac of later tubal gestation. They distinguish three directions in which the primary intra-muscular gestation-sac may rupture :—

1. Extra-tubal rupture. Here the rent occurs either (*a*) into the peritoneum ; or (*b*) into the broad ligament. In the first case the hæmorrhage is alarmingly free, causing hæmo-peritoneum and death within a few hours if untreated. In the second case the blood extravasates, but more slowly, between the peritoneal layers of the broad ligament, a broad ligament hæmatoma resulting. This form of hæmorrhage is often recurrent, and may extend over several days, or even a week or two, until an enormous retro-peritoneal collection of blood is formed. It resembles acute cellulitis, but the temperature is subnormal. After extra-tubal rupture the gestation may continue to develop, provided the hæmorrhage has not been excessive nor the separation of the ovum from its original bed extensive

2. Intra-tubal rupture. Here the gestation-sac *ruptures back* into the lumen of the tube, from which of course the ovum originally came. This form of rupture is called *tubal abortion*. The resulting hæmorrhage fills the tube (hæmatosalpinx), and if the abdominal ostium be still patent, leaks from there into the peritoneum, resulting in the formation of a *hæmatocele*. This is the commonest termination of tubal gestation, and from it the signs commonly described in text-books are culled, viz., recurring attacks of spasmodic pain, with faintness, and a discharge of blood from the uterus. The bleeding is nearly always recurrent, and results in the formation of a blood tumour, which is partly composed of the hæmatocele and partly of the gestation-sac. Sometimes, if the abdominal ostium is closed, hæmatosalpinx alone results. The symptoms closely resemble acute salpingitis and peritonitis, but the *temperature is subnormal* and the patient *becomes progressively blanched.*

3. Intra-mural rupture. Here the gestation-sac ruptures into the *substance of the tube wall.* Berkeley and Bonney liken it to a circumscribed aneurism becoming diffuse. The blood tumour which results forms a rounded or sausage-shaped swelling in the tube which externally resembles a hæmatosalpinx, but on examination it will be found that the blood is not in the tube lumen, but in a sac in the wall. After a time these tumours undergo a *secondary* rupture, usually into the peritoneum, when the bleeding becomes more severe. The early symptoms are like those of tubal abortion without hæmatocele.

These various forms of primary rupture are often combined in the same specimen. This accounts for the very variable symptoms and physical signs which may accompany the rupture of an early tubal gestation. For instance, after some days of typical "abortion" symptoms, a patient may within an hour or two be moribund, with signs of a new and extensive loss of blood, the result of an intra-peritoneal rupture. Intra-mural rupture is associated with irregular spasmodic pains, usually severe, but without symptoms of profuse bleeding or the formation of a pelvic hæmatocele. But at any moment it may be complicated by one of the more dangerous forms of rupture, causing a rapid exacerbation in the symptoms, terminating perhaps in the death of the patient.

Giles[4] has reviewed the symptomatology of extra-uterine gestation in all its phases. He considers specially those cases in which the gestation products, having ruptured out of the primary gestation-sac, continue to grow in secondary abdominal or intra-ligamentous sacs. These sacs may undergo rupture also. The results depend on the site of the rupture. In some cases the liquor amnii alone is discharged into the peritoneal cavity, followed by the fœtus, an accident causing severe shock. In others, particularly the intra-ligamentary variety, in which the greater part of the sac may be placentous, bleeding will occur, as well as shock. Herman, however, has pointed out that secondary sacs, at all events in the later months, are not often subject to rupture; and this authority believes that such cases are best treated by awaiting spurious labour and the subsequent death of the fœtus,

after which operative measures are much less risky, as the placental circulation has ceased.

Bland Sutton[5] has discussed the question of primary abdominal pregnancy in women and the lower animals. His conclusion is that it is at present an unverified speculation, and he believes that the reported cases may be explained by the readiness with which the Fallopian tube (or uterine cornua in the lower animals) is able to repair itself after rupture, thus destroying the evidence of the original site of the gestation products.

References.—[1]*Brit. Gyn. Jour.* vol. vi. No. 4; [2]*Ibid,* vol. iv. p. 280; [3]*Ibid,* vol. vii. No. 2, p. 77; [4]*Clin. Jour.* Dec. 28, 1904; [5]*Lancet,* Dec. 10, 1904.

FISTULA IN ANO. (*See* Rectum.)

FLUKE (The Asiatic Blood). *J. W. W. Stephens, M.D.*

Schistosomum japonicum (Katsurada).—This fluke was discovered independently by Katsurada in 1904 in Japan, and Catto in 1904 in a Chinaman. There is some doubt as to whether these observers were dealing with the same fluke, but the probability is in favour of the species being identical. In Japan occurs an endemic disease in man of which the chief symptoms are the following: (1) Enlargement of liver and spleen; (2) Diarrhœa with muco-sanguineous stools; (3) There may also be fever, anæmia, cachexia, ascites, and œdema. It is practically certain that the disease is due to this fluke. The adult worms, male and female, occur in the portal and mesenteric veins of man and cats; eggs in the wall and lumen of the guts, in the mesenteric lymphatic glands, in the outer wall of the gall-bladder, in pancreas, liver, in the fæces, colon, and also in the brain (Katsurada).

This schistosome differs from *Schistosomum* (Bilharzia) *hæmatobium* in that the body is not covered with numerous papillæ or warts as the male *S. hæmatobium* is. The eggs also differ: there is no lateral or terminal spine. They measure 58 to 90 by 30 to 72 μ and they have no operculum (lid). So far the bladder has not been found affected, and consequently no hæmaturia with eggs as in *S. hæmatobium.* For the literature of this most interesting parasite of man, *vide* Catto, *Brit. Med. Jour.,* Jan. 7th, 1905 (illustrated); Stiles, *Amer. Med.,* May 20th, 1905.

FOREIGN BODIES IN THE BRONCHI. *Priestley Leech, M.D., F.R.C.S.*

There have been several cases published where foreign bodies in the bronchi have been removed by the method introduced by Killian[1], viz. bronchoscopy. Bronchoscopy may be done in two ways:—

1. By passing the tube down the trachea through the larynx (superior tracheo-bronchoscopy).

2. By inferior bronchoscopy, by first doing a tracheotomy, and then introducing the instrument through the tracheotomy wound. The instruments consist of nickel-plated tubes of varying lengths and diameters: and various forceps and electro-magnets can be used for

extraction, being placed in long slender handles. The illumination is obtained from a forehead mirror, and an electric light. The bronchoscope is introduced with the head thrown back so that the trachea forms a straight tube.

REFERENCES.—[1]*Deut. Med. Woch.* Aug. 11, 1904, *Brit. Med. Jour.* Oct. 22. 1904; *Ann. Surg.* Sept. 1904; *Gaz. d. Hôp.* 1905, No. 28, p. 327; *Med. Rec.* Feb. 11, 1905; *Beit. z. klin. Chir.* xliii. Band, 3 Heft.; *Lancet*, Sep. 9, 1905.

FRACTURES. (*See also* COLLES'S FRACTURE, *and* COXA VARA TRAUMATICA.) *Priestley Leech, M.D., F.R.C.S.*

Niehaus[1] recommends the treatment of fractures of the lower end of the humerus, and some others by the temporary introduction of **Nails.** The nails are made from nickel-plated steel in various sizes and lengths, and project above the wound in the soft parts; they may be withdrawn from the fourth to the seventh day.

Dr. Stephen Watts[2] successfully tried a **Silver Bolt** for uniting fractures in a case of ununited fracture of the femur. He made a mortise as shown in *Fig.* 33. The bolt used was 1⅝ inches long, an inch in diameter, and the head was ¼ inch square, by $\frac{3}{32}$ inch thickness.

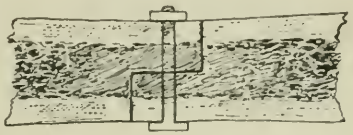


Fig. 33.

The Röntgen Rays in Setting Fractures.—Dr. Harry L. Gilchrist[2] has successfully tried setting fractures by means of the fluoroscope. He reports four cases in which this was done. An ordinary wooden-topped table can be used for the patient, and the tube is placed underneath, from 4 to 8 inches from the under surface of the board. As the exposure would not be long, the mattress and board would probably be a sufficient protection, but as an extra precaution the table could be covered with a rubber blanket which would not obstruct the rays in the least. The points in favour of this method are the ability to see every movement of the fractured extremities during their adjustment, thus avoiding the necessity of giving an anæsthetic for diagnostic purposes; saving the patient many painful manipulations, and the tissues from bruising and laceration by unnecessary handling.

R. C. Dun[3] reports an interesting case of **Multiple Fractures,** in a male infant fifteen days old. He was brought to the hospital on account of "crooked legs and a want of power in the arms." On X-ray examination definite evidence of the occurrence of 12 fractures was obtained, and in seven of these firm bony union had taken place fifteen days after birth; in four the process of repair had not started, and in one it was only slightly advanced. From this it may be inferred that the majority of the fractures took place during birth, or possibly in the uterus before labour commenced, and that the remainder occurred during extra-uterine life. The labour was normal, and there was probably some general congenital defect in bone formation. Such a condition has been described under the name of osteogenesis im-

perfecta or osteopsathyrosis. It is characterized by the occurrence of multiple and comparatively painless fractures of the shafts of the long bones, which take place without definite traumatism. Delayed ossification of the cranial bones is a common feature. Under treatment the fractured bones readily unite.

Fracture of the Acetabulum.—Destot and Durand[4] have collected nineteen cases of fracture limited to the floor of the cotyloid cavity. These fractures are produced by a fall or blow on the great trochanter. It has been impossible to produce this fracture experimentally in the dead subject, hence the mechanism of its production is not clearly understood. Rectal examination may or may not determine the diagnosis, depending upon whether the free margin of the fragment projects upwards or downwards. In some cases the symptoms resemble those of a mild contusion. Tenderness may be elicited by pressure over the fold of the groin, or by percussion on the knee or great trochanter. There is some local swelling, with prominence of the inguinal region, and Scarpa's triangle. Slight flexion with partial external rotation (the latter easily corrected but recurring) is of inconstant occurrence. Movements of the joint are painful, and the range of motion is limited. In the absence of direct traumatism a single area of nummular ecchymosis in the median line of the most dependent part of the scrotum, appearing several days after the receipt of the injury, is almost pathognomonic of fracture of the cotyloid cavity. Positive diagnosis is made by rectal and X-ray examination. This fracture is prone to be followed by chronic arthritis and partial ankylosis, which may cause prolonged or permanent crippling. In some cases it may be possible to reduce the fragments by manipulation through the rectum. Later, massage and passive movements are helpful.

Intra-capsular Fracture of the Hip Joint.—Manley[5], of New York, records a case of union of an intracapsular fracture of the neck of the femur. The patient, a woman aged fifty-eight, was admitted into hospital with an undoubted fracture of the neck of the femur Five years later she came under notice with a scirrhus of the breast. There was $1\frac{5}{8}$ inch shortening of the leg, and there was extreme inversion of the foot; the prominence of the trochanter major had disappeared from its normal site, and appeared to have rolled inwards; there was good motion at the hip joint, but rotation was restricted, and she walked with a slight limp. At the time of the fracture there was not quite half an inch of shortening. Post mortem, the head of the femur showed complete absorption of the cervix femoris.

Fracture of Neck of Humerus.—Hill[6] reports a case of fracture of the surgical neck of the humerus, in a man eighty years of age. He died at the end of six weeks, and a post-mortem examination showed firm bony union of the fracture.

Fracture of Patella.—Hutchinson[7] records his personal experience of seven cases of fractured patella, of which six were treated by the direct open method with wiring of the fragments. He has usually

operated a week or ten days after the fracture; massage and passive movements in ten days after operation. The precautions he takes are as follows: The operation is done quickly; rubber gloves are used; as soon as the joint is opened, sterilized gauze saturated in normal salt solution is carefully packed into the cavity, and continuous irrigation with salt solution is kept up. The only foreign substance, other than the gauze, introduced at any time during the operation, was a forceps or curette to lift out blood clot.

Rigby[8] advocates the wiring of every fractured patella, unless some definite contra-indication is present. He has operated on twenty-one cases by the open method. One striking point is the comparative short period of disablement after operation, compared with the treatment of this condition by other methods. In from six to eight weeks after operation the patient is, as a rule, back at his work. A clear gain of six months can be reckoned on in an average case, and the operation ensures sound bony union with a perfect functional result. He advises the semilunar incision, and thinks the use of two wires for suture advisable. He has had no trouble with the wire, and attaches great importance to careful suturing of the lateral expansions of the torn quadriceps. He does not irrigate the joint with saline solution, but mops the clots out with gauze, and leaves two small draining tubes in for 48 hours. In only one case did sepsis take place; suppuration occurred in the knee joint, and subsequent amputation was necessary; curiously enough it was the only occasion on which he operated in rubber gloves.

Fractures of the Tarsal Bones.—Eisendrath[9], of Chicago, finds, after looking up the literature of the subject, that there are few fractures of the tarsal bones recorded, other than those of the astragalus and the os calcis. Fractures of these two bones may be produced in one of six different ways, given in their order of frequency:—

1. Compression fractures. These form the larger number of the cases, as in falling on the feet from a height.

2. Fractures of the neck of the astragalus, following sudden dorsal flexion of the foot.

3. Fractures of both astragalus and calcaneus, following forced supination or pronation of the foot.

4. Fractures of the os calcis, which result from forcible action of the muscles of the calf.

5. Crushing fractures, as in being run over, and often other than tarsal bones are broken.

6. Gunshot fractures.

In making a diagnosis the following are of the greatest value: (*a*) Palpation of a fragment, pes valgus or varus traumaticus; (*b*) The X-ray examination; (*c*) The history of the case.

Treatment.—In simple fractures without displacement, the foot should be immobilized at right angles in a removable case well padded around the ankle and heel. Begin massage on the third or fourth day to reduce the peri- and intra-articular effusion, and prevent atrophy

of the leg muscles. Flat-foot is very liable to ensue, and may be remedied by the wearing of a suitable steel insole.

In simple fractures with displacement, if a fragment presses on the skin it is best to open the joint and remove it, if it is situated laterally; if it is situated behind and the tendo achillis is detached from the os calcis, the tendon should be sutured to the os calcis; if either the os calcis or astragalus is badly splintered they may be removed without marked loss of function in the foot.

Fractures of Wrist Bones.—Codman and Chase[10] consider the fracture of the carpal scaphoid and dislocation of the semilunar bone, and give notes of eighteen cases. Pfitzner thinks there are two centres of ossification for the scaphoid, and the authors think that bipartite scaphoids may possibly be ununited fractures of the bone. The typical history of fracture of the scaphoid is that the patient, usually a male from twenty-five to thirty-five years of age, has fallen on his extended wrist as in the production of a Colles's fracture, and he thinks he has sprained his wrist; after a rest he is able to work, but there remains pain, tenderness, and weakness of the wrist, and the active and passive movements of the wrist joint are limited in their range. On an attempt to continue passive motion beyond a certain point, especially in extension, muscular spasm comes on, and if persevered with, the motion causes intolerable pain. There is no crepitus or ecchymosis, but there is slight swelling or thickening over the radial half of the wrist joint; pressure over the anatomical snuff-box elicits signs of tenderness. There is more or less permanent impairment of the wrist. Many of the patients do not consult the surgeon until some time after the injury. The fracture of the scaphoid may also co-exist with Colles's fracture. The diagnosis made by the X-rays should be made with the utmost caution, and only considered positive when a good view of the bone at right angles to its long axis is obtained. The best position in which to get a good skiagraph of the scaphoid is to place the two wrists of patient in adduction, and to place the tube over the mid-line, between the two hands, as far forward as the level of the knuckles.

Treatment.—If seen immediately, fixation in a splint would probably lead to union of the fracture; and in four weeks resort to massage. If, in spite of fixation and after treatment, there remain pain and inability to use the joint, excision of one or both halves of the joint is recommended. Operation should not be delayed many months if improvement is not taking place, as secondary joint changes may occur, and chronic arthritis result. The advisability of operation in cases of long standing is doubtful, and must be decided by the amount of disability present in each individual case.

Ununited Fractures of the Neck of the Femur.—Freeman[11] thinks in these cases the open operation has been too much neglected. In selected cases he recommends an anterior incision; he says it gives adequate access to the joint; no muscles or other structures of importance are divided or even endangered; the absence of a wound at the back of the trochanter lessens the risk of infection,

and the after treatment of the wound can be conducted without having to turn the patient. The incision should begin a short distance below, and external to the anterosuperior spine, and extend directly downwards for three or four inches. The fragments must be freshened, and all loose tissue removed from between the two ends. Nails, pegs, or screws may be used to fasten the fragments together, but sometimes the bone of the upper fragment is so porous that they will not hold, and he then recommends a modified Parkhill bone clamp. A case operated on by himself is given, and also a list of cases operated on by other surgeons.

References.—[1]*Arch. f. klin. Chir.* Band 73, Heft 1; [2]*New York Med. Jour.* Oct. 22, 1904; [3]*Lancet*, May 20, 1905; [4]*Lyon Méd.* No. 9, 1904; [5]*New York Med. Jour.* Oct. 29, 1904; [6]*Lancet*, Dec. 17, 1904; [7]*Ann. Surg.* Oct. 1904; [8]*Pract.* May, 1904; [9]*Ann. Surg.* Mar. 1905; [10]*Ann. Surg.* Mar. 1905; [11]*Ibid*, Oct. 1904.

FURUNCULOSIS. *Norman Walker, M.D.*

Dreuw[1] has devised a **Superfatted Yeast Soap** which is beneficial in this condition. The soap lather is allowed to dry on the affected part, and in this condition, as also in folliculitis and acne, he has obtained good results.

Wright[2], with injections of **Dead Staphylococci**, has achieved success, and in his own words, "Every patient I have inoculated for boils has got well promptly." The method is a laborious one and not likely to be ever adopted in general practice. More information will be found under "Acne" and "Tuberculosis of the skin."

References.—[1]*Deut. Med. Woch.* June 30, 1904; [2]*Brit. Jour. of Derm.* Aug. and Sep. 1904.

GALL-BLADDER (Surgery of). *A. W. Mayo Robson, D.Sc., F.R.C.S*

W. J. and C. H. Mayo[1] review the results of 1000 operations for gall-stone disease occurring in their practice. There were 50 deaths (5 per cent), counting as a death every patient operated upon who died in the hospital, without regard to cause of death or length of time thereafter; 960 for benign disease, with 4·2 per cent. mortality. In the case of more than one procedure through a single incision, only the major was counted, therefore, 101 cholecystotomies and 44 cholecystectomies in connection with common-duct operations were not included. Of 673 cases operated upon by cholecystotomy there was a mortality of 2·4 per cent. This group included most of the acute infections. In no case did the stones reform in the gall-bladder. This was the operation of choice in the average uncomplicated case, and especially if there was or had been cholangitis. Of cholecystectomy, there were 186 operations, with a mortality of 4·3 per cent. This operation was employed for special indications, such as cystic duct obstruction, thick-walled gall-bladders suspicious of malignant disease, and cholecystitis without calculi. There were 137 operations for stone in the common duct, with a mortality of 11 per cent—7 per cent from the operation, and 4 per cent from secondary complications after more

than three weeks. Of the cases operated upon during the quiescent period, with little jaundice and slight infection, all recovered. There were 4 cases with extreme icterus from obstruction, in which there were subcutaneous hæmorrhages at the time of operation (purpura). All of these patients died. Of 4 cases of complete biliary obstruction in which the common and hepatic ducts were filled with clear cystic fluid and no bile, all the patients died. Of the cases of malignant disease, 14·6 per cent were of the common duct. There were 40 cases of malignant disease, with 22·5 per cent mortality; 2 patients with cancer of the gall-bladder were now alive and well more than two years after operation; they had also had 2 additional favourable cases of more recent date. Of the remaining malignant cases, a few received marked palliation, but the majority were but little benefited.

Choledochotomy for Calculi in the Common Duct.—At the Royal Med. and Chir. Soc., Mayo Robson read a paper on a series of 123 cases. Before he had employed his method of thorough exposure of the deeper part of the biliary passages the mortality had been 16·2 per cent, but since he had had 53 consecutive recoveries, and in a continuous series of 80 operations there had only been 3 deaths, the mortality being therefore under 3·9 per cent. Of these, two might justifiably have been excluded from the series. In several cases he had found floating gall-stones in the common duct where there was no jaundice, but simply repeated rigors with associated infective cholangitis. On five occasions he had removed gall stones from the common duct where the patients had not had any pain, the deep jaundice and repeated rigors having led to a diagnosis of intermittent fever. In half the cases pancreatic catarrh or interstitial pancreatitis had complicated the gall-stone trouble, and was cured by free drainage of the bile ducts. In a number of the cases cirrhosis of the liver had resulted from the biliary stasis. A number of the patients were advanced in years, and the age of seventy and upward seemed to be no barrier to a successful operation. In all the cases, drainage of the bile passages, either through the common duct or through the gall-bladder, was advocated. The disease was essentially a septic one, but primary union of the wound was the rule, and generally from the time of the drainage away of the septic bile all signs of the ailment being of a septic nature disappeared. Although common-duct cholelithiasis was usually without operation a fatal disease, by means of operation the chances of recovery were at least 95, and might be 98 per cent.

Mobilization of the Duodenum.—The method first suggested by Professor Kocher has been found of service by other operators. Payr[2] presents some views concerning the mobilization of the duodenum in the removal of gall-stones from the retroduodenal portion of the common duct. This he carries out by means of a curved incision, convexity outward, of the peritoneum, 12 to 15 cm. long and 1 cm. from the duodenal border. The duodenum is then pushed aside until the head of the pancreas appears, when the common duct can be easily palpated throughout its extent. A stone lying therein can be manipu-

lated until it is drawn into the wide supraduodenal portion of the duct, from whence it can be extracted through an incision. The advantages he claims for this method are the elimination of a retro-duodenal opening of the duct and the difficult suturing of the same.

Acute Cholecystitis simulating Appendicitis.—The striking similarity which acute cholecystitis may bear to acute appendicitis has been frequently observed and reported, and is referred to in the third edition of my work on "Diseases of the Gall Bladder and Bile Ducts" This similarity seems to occur in two well-defined groups of cases, in which the anatomical conditions differ, and in which the difficulty in diagnosis arises from different causes.

The greater number of instances comes in that group of cases in which the inflamed gall-bladder is in its normal position, but in which pain and tenderness, in the presence of distension and rigidity, are referred to the appendix region. The second group of cases is made up of those in which an inflamed gall-bladder reaches into the iliac fossa, either through great enlargement or through displacement. Here the error in diagnosis is the result of finding a painful, tender mass in the region of the appendix. This type is less common than the first. A. L. Chute[3], of Boston, reports two cases illustrating the first variety.

Dilatation of the Gall Bladder simulating Ovarian Cyst.—Alban Doran[4] has reported very fully a case of the above recently under his care, and has gone very fully into the literature of the subject, referring to all the published cases. Though rare, these enormous cysts of the gall-bladder are sufficiently common to require bearing in mind in the diagnosis of any abdominal cyst. In one case 60 to 80 lbs. of fluid are said to have been evacuated from a dilated gall-bladder.

Gall-Stones and Cancer.—For many years it has been believed that the association of gall-stones with malignant disease of the gall-bladder or biliary passages is very common, and when careful statistics bearing on the subject have been prepared no doubt can remain that a large proportion of persons who suffer from gall-stones die from carcinoma of the biliary tract, and that in nearly all cases of malignant disease of this region gall-stones are present or a history of their previous existence can be obtained. Whatever theory we may hold as to the etiology of malignant disease this connection is clear. G. R. Slade[5], of the London Hospital, has been carefully investigating the cases in that institution in which gall-stones have been found at the post-mortem examination or in which malignant disease of the gall-bladder has been present. The results are very striking. In all, 33 cases of gall-stones were discovered amongst 2180 consecutive complete necropsies, and in just one-half of these (17 out of 33) no symptoms indicating gall-stones had been present, and in all but one of these 17 cases there was no naked-eye evidence of malignant disease, while in the remaining case microscopical examination showed carcinoma. Of the 16 cases where symptoms had been present nine gave definite evidence of the presence of malignant disease, but in the other seven cases, though

macroscopically "chronic inflammatory thickening" was present, no histological examination was made. Thus we see, if these figures be correct, that in 30 per cent of all cases of gall-stones malignant disease was present, as it was in 56 per cent of all cases where gall-stones had caused symptoms during life.

These pathological findings are much in excess of anything that I have seen clinically, though I am quite in agreement with Slade in his general conclusions that gall-stones predispose very frequently to cancer, as I also agree with his suggestion that seriously damaged gall-bladders should be removed. But as a matter of fact the removal of gall-stones and subsequent drainage of the gall-bladder has been followed by cancer very rarely, if we may judge by the fact that only two cases have been recorded in the voluminous literature on this subject. The true lesson to learn from Slade's observations is that gall-stones should be removed early before serious complications ensue, and fortunately the operation of cholecystotomy can be done with less than 1 per cent mortality in this early stage.

REFERENCES.—[1]*Amer. Jour. Med. Sci.* Mar. 1905; [2]*Deuts. Zeits. f. Chir.* Oct. 1904; [3]*Med. Rec.* Aug. 13, 1904; [4]*Brit. Med. Jour.* June 17, 1905; [5]*Lancet*, April 22, 1905.

GLANDERS. *E. W. Goodall, M.D.*

This disease has been very rife amongst horses in London and elsewhere in this country for some years past, and apparently is on the increase. The disease attacks the human subject in both acute and chronic forms, and the former is exceedingly fatal. Several cases have recently been published, and from the accounts given it appears that the diagnosis is not by any means easy in the early stages. The diseases for which it is most likely to be mistaken are pyæmia, septicæmia, acute rheumatism, typhoid fever, acute pneumonia, cellulitis, influenza, and small-pox. An acute febrile disease occurring in any person who is employed about horses should always raise a suspicion of glanders. Yet the writer has recently had under his care an ostler who became affected with glanders, but was said to be suffering from "obscure blood-poisoning" by one practitioner, and "typhoid fever" by another. It is true that the case was not obviously one of glanders, the most conspicuous symptom being inflammation of one of the knee-joints. But the man's occupation raised the suspicion of glanders, and a bacteriological examination of the fluid from the joint revealed the bacillus mallei. The patient died a fortnight later with pustules in the skin, abscesses in the muscles and lungs, and a purulent discharge from the nose, all of which are common in acute glanders.

One of the most suspicious clinical signs is suppuration in the muscles. In the case just mentioned there was one abscess to be detected in the extensor muscles of the left forearm when the patient was admitted to hospital. In another case which was under the care of the writer two years ago, and was sent to hospital as a case of typhoid fever with periosteal abscesses, careful examination showed that

the abscesses were mostly in muscles, and not connected with bone. The patient was a printer, and had nothing to do with horses: but the intramuscular abscesses, together with a few small pustules on the forehead and elsewhere, roused a suspicion of glanders, and led to a bacteriological examination, which at once cleared up the case.

When fully formed, some of the pustules in glanders bear a fairly close resemblance to those of small-pox. But in glanders the pustules form very rapidly, and do not go through any vesicular stage.

The treatment is very unsatisfactory. Little can be done except to relieve symptoms. But the patient should be isolated, and great care should be taken that those who have to attend upon him do not contract the disease.

References.—*Lancet*, April 15, June 17, and Aug. 26, 1905.

GLAUCOMA. *A. Hugh Thompson, M.D.*

No subject in the whole range of ophthalmic science has given rise to more controversy than chronic glaucoma, partly no doubt because the treatment of this condition is in such a large proportion of cases unsatisfactory. As yet general agreement, either on the pathology or the treatment of the disease, seems almost as far off as ever. Thus Zimmermann's[1] view is that glaucoma depends on a reduction of arterial blood pressure, due to cardiac weakness causing the intra-ocular tension to be relatively high. He therefore relies mainly on the internal administration of **Strophanthus** in early cases, and resorts to operation only in the cases where the conditions leading to low arterial tension cannot be eliminated. Paterson[2], criticizing this, remarks that the vascular changes so frequently met with in glaucoma patients rather suggest an increased than a lowered arterial tension. Moreover it is the rarest thing for a patient with severe cardiac disease to develop glaucoma. A systematic study of the arterial and venous blood-pressures in cases of chronic glaucoma seems well worth carrying out, as it might throw some light on its etiology.

A help in the diagnosis of early cases of the disease, where no rise of tension is perceptible, is obtained from the use of Bjerrum's screen, and test objects, in addition to the ordinary perimeter[3]. The method affords a delicate means of testing the integrity of vision over the central portions of the field by means of test objects which subtend a very small visual angle (two minutes). In the normal eye the field for such a small object is intact up to about 26° from the fixation point, but in the case of a glaucomatous eye this field shows characteristic scotomata differing in character from the scotomata which a case of optic atrophy shows.

With regard to treatment, first as to myotics, Roosa[4] puts in a word in favour of **Oily Solutions** of eserine, rather than watery ones, 2 or even 4 grains to the ounce. This method of administering the drug seems well worth a trial in cases where the expectant treatment is decided on.

The instillation of **Adrenalin** along with **Eserine** every half hour is

said by Grandclément[5] to have a power in reducing tension in early cases possessed by no other drug. On the other hand Senn and MacCallan[6] have reported cases where a disastrous rise of tension has been traced to the use of adrenalin in the 1–1000 solution. If employed at all it should at any rate be in very weak solutions.

As to operative treatment, **Sympathectomy** is still being practised by some surgeons on the continent and in America. Thus Wilder, of Chicago, follows Abadie, who says: "In acute forms of glaucoma and in sub-acute with intermissions, practise first iridectomy, and if it fails do sympathectomy. In simple glaucoma use myotics twice a day; if they suffice, continue them; if in spite of their systematic employment the vision fails, do sympathectomy."

In this country the operation of **Iridectomy** even for chronic glaucoma has never lost its ground, though the most that can be expected from it in these cases is to arrest the progress of the disease, and in too many cases it fails even to do that. In the opinion of Berry[8], however, and of many other ophthalmic surgeons, iridectomy is by far the most satisfactory operation, and the earlier in the course of the disease that the operation is resorted to, the more certain is its effect. Even here a difference of practice exists in the method of operating. Most authorities teach, and it is the general practice, to make the iridectomy both large and as peripheral as possible. Berry thinks it a mistake to make it too peripheral, apparently because of the danger of a wound in the region of the ciliary body, and he advocates a small iridectomy with a keratome and Tyrrell's hook, instead of the large iridectomy which is the ideal of most of us.

It will be observed that the foregoing applies to simple or chronic glaucoma. In the case of the acute or subacute forms of the disease, there is no one who questions either the necessity or efficiency of prompt iridectomy.

References.—[1]*Ann. Ophth.* Jan. 1904; [2]*Scot. Med. and Surg. Jour.* July, 1904; [3]*Ophth. Soc.* see *Ophth. Rev.* June, 1905; [4]*Ther. Gaz.* May 15, 1904; [5]*Ophth. Rev.* 1904, p. 298; [6]*Ibid.* May, 1905; [7]*Scot. Med. and Surg. Jour.* May, 1904; [8]*Brit. Med. Jour.* Nov. 12, 1904.

GLIOMA. (*See* Retina and Choroid.)

GOITRE (Exophthalmic). *Alfred H. Carter, M.D.*

Salmon[1] suggests that the origin of this disease is to be found in some disturbance of the hypophysis cerebri, probably of a toxic nature, causing insufficiency of its internal secretion, to which the thyroid responds secondarily by functional over-activity. Gordon[2] also expresses an opinion in favour of a nervous origin, probably toxic. As giving some support he reports a case in which paralysis agitans and Graves' disease came on together in the same patient—an association which he thinks was not likely to be accidental.

Jellinck[3] states that in Graves' disease there is a uniform, diffuse, brownish pigmentation of the eyelids, which is most marked in the upper lid. The pigmentation is bounded by the eyebrows superiorly,

and the lower margin of the orbit inferiorly. The conjunctiva is not affected. This is an early symptom, and frequently becomes less distinct as the disease advances; in rare cases it may be entirely absent. A tendency to pigmentation of the skin has been observed by others, both in Graves' disease and myxœdema, but the localization on the eyelids has not previously been described.

Blake[4] also claims, as a new sign of Graves' disease, that in a certain proportion of cases, though not in all, the heart is found to work more rapidly in the recumbent than in the erect posture.

TREATMENT.—Among recent remedies, Jones[5] suggests **Llangammarch Mineral Water,** which, among other things, contains chloride of barium, exerting a slowing effect upon the pulse. He reports a case in which a glass of this water three times a day, with a course of baths on alternate days (particulars not given), combined with regular moderate exercise, including hill-climbing, proved successful.

Joussemet[6] thinks that **Sodium Salicylate** in 15 gr. doses, three or four times a day, is in some cases an adjuvant remedy of considerable value.

Experiments with organic substances have been made, which are more notable for their ingenuity than for therapeutic success. Walsh[7] has employed desiccated parathyroid gland-substance, in doses of 1 gr. three times a day, but he does not think it is of any benefit; and, if taken in large doses, even for a few days, or in small doses for many days, it produces an exacerbation of symptoms. Lademann[8] and others have tried feeding patients with the **Milk of Thyroidectomized Goats,** in accordance with a suggestion by Lanz in 1894, and claim to have had successful results. Perhaps the quaintest suggestion for dealing with this dark corner of pathology is from a practitioner at Colorado Springs, who recommends the frequent recitation from memory of "simple inspiring poems" (giving Longfellow's "Psalm of Life" and "Light of Stars" as examples).

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Robt. Hutchison, M.D.

E. von Leyden[1] gives a useful summary of the results of the organotherapy of this disease. The treatment is based upon the assumption that it is the function of the thyroid to neutralize toxic products of metabolism in the body. When this function is lost myxœdema results; when the thyroid secretion is produced in excess, exophthalmic goitre ensues.

Ballet and Enriquez used the dried blood of thyroidectomized dogs in the treatment of exophthalmic goitre. In such blood there is an absence of the usual thyroid secretion, and (presumably) an excess of the toxins which it is the function of the normal thyroid to neutralize. Such toxins, it is expected, will serve to neutralize the excess of thyroid secretion. The therapeutic results of this treatment are stated to have been encouraging.

Lanz, of Amsterdam, excised the thyroid of goats, and conceived the idea that the substance which neutralized the toxin of exophthalmic goitre might be present not only in the blood but in the milk. He therefore treated patients with from a quarter to half a litre of such **Thyroidectomized Milk** daily, with good results. Burghart and Blumenthal followed up and confirmed these results. They found that goats lived for months or even years after thyroidectomy, while dogs, on which they had at first operated, died after a few days. They, however, encountered a practical difficulty in the treatment, namely, that after a short time patients refused to drink thyroidectomized goat-milk. They, therefore, sought for the active substance in the milk, and find that it is contained in an alcoholic precipitate. This they rubbed up with an equal part of milk sugar, and the resulting substance, which they have called **Rodagen,** is used.

Möbius, working on similar lines, has obtained good results by administering the **Serum of Thyroidectomized Sheep** either hypodermically or by the mouth. Madsen has made a preparation of the dried and powdered blood of thyroidectomized goats in tablet form, and Christens has used this successfully in exophthalmic goitre. Von Leyden has used all of these preparations with favourable results, but latterly has preferred rodagen. He cites three successful cases of its use. Recovery is usually complete in three or four weeks, but in severe cases treatment must be continued much longer.

Kuhnemann[2] records two cases successfully treated by rodagen. Hempel[3] reports a cure in the case of a woman aged fifty-five, by the use of Möbius' serum, and in the same magazine Theinger records cures in four cases following the administration of 5 cc. by the mouth daily. Indemans[4] has successfully treated a case with 90 to 180 drops of the same serum daily. Christens[5] treated eighteen patients with fresh milk, rodagen, serum, and dried tablets, and in the great majority of the cases has had favourable results.

Attempts to cause an active immunization against thyroid have not hitherto passed beyond the experimental stage. Murray[6] tried the effect of the serum of rabbits fed for three weeks on liq. thyroidei three times a week for three weeks. Two cases of exophthalmic goitre were treated with doses of from 3 to 6 cc. thrice daily, but without any demonstrable benefit.

P. Sainton and B. Pisanté[7] report three cases treated with the blood and serum of thyroidectomized sheep. The first patient was a woman, thirty-five years of age, who had been ill for a year and a half. She had been treated with various drugs, thymus extract, and thyroid capsules, with no effect. A spoonful of the blood of a thyroidectomized sheep diluted with glycerin and put into coffee, was given to the patient. Improvement followed, and the results of the administration of serum were still more marked. The second patient was a man thirty-one years of age. Improvement followed the administration of the sheep's blood. Treatment was stopped, and a relapse was the result; it was then renewed with the same excellent results. The

third patient, a woman of fifty-one years, was treated by injections of the blood. She had been suffering from goitre for ten years, but the treatment was rewarded by progressive improvement.

Jonnesco[8], in a report on the present aspects of the treatment of exophthalmic goitre by **Resection of the Cervical Sympathetic**, sums up as follows: (1) Resection of the sympathetic is the operation of election in the treatment of primary exophthalmic goitre; (2) This resection, to be rational and efficacious, ought to be practised on the whole of the cervical chain of ganglia, and, in addition, on the first thoracic ganglion; (3) The operation is absolutely harmless, but, with the object of ensuring safety, it is preferable to perform it in two stages; (4) To determine the therapeutical result the surgeon should wait for some time, as the patient after operation often passes through a stage of uncertainty in which symptoms of Basedow's disease may for a time be exaggerated; (5) In the form of goitre that is presented in Basedow's disease, resection of the sympathetic is contra-indicated in the first place, the operation of election in such condition being partial thyroidectomy, followed after a certain interval by resection of the sympathetic, if the associated symptoms of the general disease are not relieved.

REFERENCES.—[1]*Med. Klin.* Dec. 1, 1904; [2]*Münch. Med. Woch.* No. 10, 1904; [3]*Ibid*, No. 1, 1905; [4]*Med. Tijdsskrift voor Geneskunde*, ii, 3, 1904; [5]*Med. Klin.* Jan. 5, 1905; [6]*Lancet*, Aug. 27, 1904; [7]*Rev. Neurol.* Dec. 1, 1905; [8]*Brit. Med. Jour.* June 25, 1904.

GOITRE (Lingual). *Priestley Leech, M.D., F.R.C.S.*

This is a tumour consisting of normal or pathological thyroid tissue arising from one of the accessory thyroid glands, which may be formed at the base of the tongue in the course of the development of the thyro-glossal duct. Accessory thyroid glands may be divided into two groups, viz. those occurring above the hyoid bone, and those below.

Storrs[1] has a paper on the first of these groups. The size of the lingual goitre may vary from that of a hemp-seed to a pea, while their contour is either round or ovoid, with a smooth or granular surface. They may be encapsulated and free in the deep muscles of the tongue, but as a rule they are attached to the hyoid bone by a kind of fibrous ligament, which is supposed to be the remnant of the thyro-glossal duct. Histologically their structure is that of the thyroid gland; their blood supply is derived from the lingual arteries.

It is only when some pathological process is set up in these accessory thyroid glands that the patient becomes aware of their existence. The disease of lingual goitre is a rare one—Storrs says he was only able to find 29 cases in all, and other three which he has collected make 32 altogether. It occurs more frequently in women; only in three cases out of thirty did it occur in men. It may occur at all ages, in a new-born child, and in a woman seventy-seven years of age. In some cases, when the thyroid has been absent, these lingual glands have become hypertrophied and taken on the function of the thyroid,

and on their removal myxœdema has occurred. The tumours may be present for some time without giving rise to any symptoms, and then suddenly symptoms appear. Probably puberty plays an important rôle in the development of these growths.

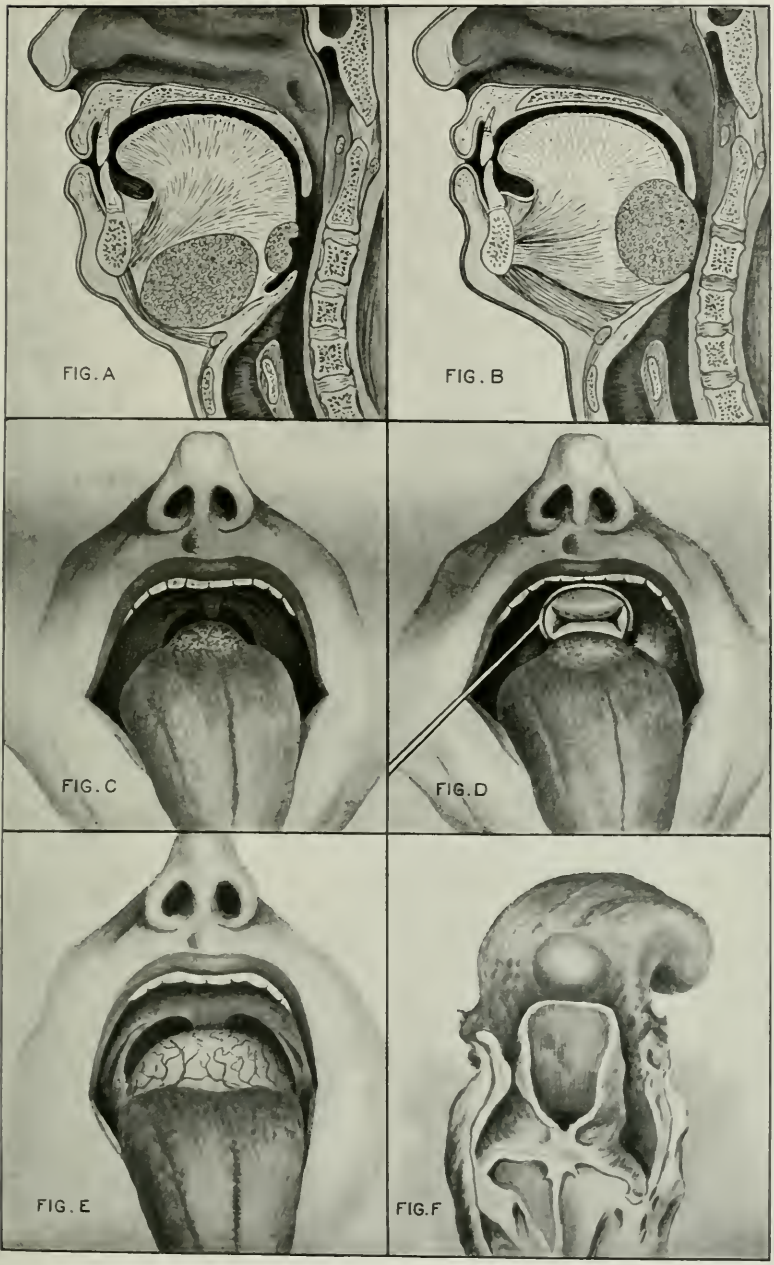
Situation.—They are generally situated on the dorsum of the tongue, just behind and below the foramen cæcum (*Plate XXII, Figs. A, B*), but sometimes enclosing it; they are round or ovoid, and vary in size from that of a cherry or small nut to a man's fist. The tumour is encapsuled, and may project from the surface of the tongue, or may be buried in the muscles of this organ. At operation, as a rule, the tumour has been most easily enucleated. It is greatly infiltrated with blood-vessels, which penetrate deeply into the tumour; and these are the cause of the profuse hæmorrhages which occur at operation. It may or may not be movable; its consistency is variable.

Symptoms.—These are various, and are purely functional. The size and situation of the tumour determine the severity of the symptoms. It may be the size of a walnut and cause no symptoms, and it may be only the size of a cherry and yet be so situated that by projecting into the pharynx it causes serious trouble. The symptoms are such as would be produced mechanically by any foreign body, and with one exception are not at all pathognomonic. The voice changes, deglutition may be interfered with, with increased salivation and fits of coughing. The respiration is only troubled in the case of the largest tumours, or where the tumour is situated low down over the epiglottis. The one symptom characteristic of lingual goitre, and upon which great stress should be laid, is the occurrence of *profuse hæmorrhages*. These occur at any time, and without any apparent cause. They are unaccompanied by coughing, vomiting, or pain, and the patient is simply aware that her mouth is filled with fluid, which on expectoration proves to be blood. These hæmorrhages are due to rupture of one of the many vessels covering the mucous membrane of the growth (*Fig. E*). The mucous membrane is very thin, and is continually being torn by bits of food passing into the œsophagus, or by constant rubbing against the epiglottis and posterior wall of the pharynx. Sometimes the growth can only be seen with the laryngoscope (*Fig. D*). The diagnosis is not always easy. Sometimes the only symptom is hæmorrhage. The slow growth of the tumour, the long latent period, and the sudden development, absence of pain, and infiltration of the surrounding tissues, absence of enlargement of cervical glands, and the general good condition of the patient, and absence of ulceration, distinguish it from carcinoma or sarcoma. An angioma may be covered with tortuous vessels and give rise to hæmorrhages, but its colour is violet or bluish black, and it is quite easily reduced on pressure, immediately filling again. Fibroma, cysts, gumma, and hypertrophied lingual tonsil may also simulate lingual goitre.

Prognosis and Treatment.—The prognosis is favourable. The only rational method of treatment is removal. The base of the tongue

PLATE XXII.

LINGUAL GOITRE.



may be reached either through the mouth, or by an incision in the suprahyoid region, which may be simple, or include the hyoid bone or inferior maxilla.

REFERENCE.—[1]*Ann. Surg.* Sep. 1904.

GONORRHŒA. *J. W. Thomson Walker, M.B., F.R.C.S.*

The similarity in appearance and culture of the meningococcus of Weichselbaum and the gonococcus is well known. Class observed several cases in which cerebro-spinal meningitis was combined with gonorrhœal urethritis, and he was disposed to look upon the diplococci of the two diseases as identical. The meningococcus was proved, however, to be innocuous when injected into the urethra in man.

Pinto[1] was able to raise the virulence of the gonococcus to a remarkable degree by passing the diplococcus alternately through rabbits and ascites broth. In this condition the gonococcus resembled the meningococcus in culture and in morphological characters and inoculation experiments. The author therefore believes that these two cocci are merely varieties of the same species.

General infection of the body by the gonococcus is now well recognized as occurring with some degree of frequency in cases of gonorrhœal urethritis. The heart is one of the most frequently affected organs, but it is not always possible to discover the gonococcus in the blood during life in these cases. P. Krause[2] gives a careful description of two cases wherein he was able to demonstrate the gonococcus in the blood during life. One case was a man who had acute gonorrhœal arthritis fourteen days after infection, and this was followed by gonococcal septicæmia a fortnight later. The patient died twenty-two days later. The second case was a woman who had been treated for a ruptured perineum after child-birth, and showed an increased leucocyte count and rise of temperature on the 19th day. On the 24th day there was swelling of the right knee joint, and gonococci were found in the blood. This patient recovered after three months' illness.

Busquet and Bichelonne[3] in reviewing our present knowledge of general gonococcal infection state that subcutaneous and intermuscular abscesses are the rarest forms of metastatic infections. Subcutaneous injection of gonococci has usually led to negative results, but Wertheim succeeded in 1892 in producing circumscribed areas of inflammation which resolved without suppuration by experimenting upon himself. Pure cultures of the gonococcus have been obtained from abscesses in several cases. The authors record a case of gonococcal abscesses in the calf of the leg and left forearm in a soldier.

W. H. Wyun[4] records three fatal cases of "gonococcal pyæmia." The seminal vesicles were affected in all three cases, and the author suggests that the general infection may possibly have originated here rather than in the urethra. General gonococcal infection is more common in males than in females, and the author suggests that this may result from the greater length of the urethra and the numerous diverticula and sinuses in the male.

[The author makes no reference to the much greater surface afforded by the vagina and uterus and the fallopian tubes in the female.—Ed.]

In two of these cases the rare complication of subcutaneous abscesses was present. In one case there were abscesses in the kidneys and lungs, and the author remarks that he has not found any case in the literature when gonococcal abscesses were situated in the lungs. The author carefully reviews the literature of the subject.

In an interesting and instructive paper read before the New York Academy of Medicine, Dr. L. Emmett Holt related his experience in regard to gonococcus infections in children, and he referred especially to the prevalence of these infections in public institutions and the means of their prevention. He traced the history of gonococcus infections in the Babies' Hospital in New York, and showed that increased care in bacteriological examination and in the isolation of such cases had led to the stamping out of the epidemics of this disease which had been prevalent. From the information that he collected he concluded that the disease was common to the same degree in other institutions devoted to the care of children.

The statistics he presented related only to the three principal clinical forms of gonococcus infection which were met with, namely: vaginitis, ophthalmia, and arthritis, and the observations were made upon infants and children up to three years of age. There were in all 273 cases of vaginitis, 101 of which were admitted and 172 cases were acquired. In well-marked cases the discharge was abundant, but extension to the uterus and adnexa and urethritis and cystitis were not observed. In mild cases the discharge was slight and might escape observation, but there was no doubt from the bacteriological investigation and from the clinical cause and instances of contagion that these were also true cases of gonorrhœal infection. Twenty-six cases of gonorrhœal arthritis were observed, and pus developed in about one-third of these. Fourteen of these children died and twelve recovered. In many of the cases death was due to the associated general marasmus. A single joint was involved in 5 cases, and three or more joints were involved in 16 cases. In most cases four or five joints were affected, and in one case eight joints (both wrists, both ankles, both knees, one shoulder, and one tempero-maxillary) were involved. The order of frequency in which the joints were involved was as follows: Finger or metacarpal 20 times, ankle 18, knee 17, wrist 12, toe or metatarsal 10, shoulder 9, elbow 5, tempero-maxillary 1, hip 1.

The pathological process in the joints so far as was observed, consisted in an acute inflammation chiefly affecting the synovial membrane and rarely involving the cartilage or other joint structures. A very considerable number of the surviving cases were kept under observation. There was complete recovery of the joint in many, slight stiffness in a small number, and marked fibrous ankylosis in only one or two. In none was there bony ankylosis.

In children whose general condition was fairly good, early incision and washing the joint usually sufficed for a rapid cure, while in some

incision only was practised. Prolonged discharge and formation of sinuses were not seen.

Holt discussed fully the measures necessary to suppress outbreaks of the disease. It was imperative, he said, that children suffering from gonorrhœal vaginitis should not remain in the same wards as other children. A similar danger, though less in degree, existed with gonococcus ophthalmia and acute gonococcus arthritis or pyæmia. These children must be excluded from the hospital, or, if admitted, immediately quarantined. Cases of gonococcus vaginitis can only be excluded from hospital wards by the systematic microscopic examination of smears from the vaginal secretion of every child admitted. The quarantine to be effective must extend to nurses and attendants, and the napkins, bedding, and other clothing of infected children must be washed separately from that of the rest of the house. One of the greatest difficulties in connection with gonococcus vaginitis arose from the prolonged quarantine necessary on account of the intractable nature of these cases. It was not sufficient to continue quarantine until all inflammation has subsided and a single negative examination for the specific organisms had been made. Such children must be watched for two or three weeks longer, and even then mistakes might occur. The danger to nurses from accidental infection, especially in the eyes, was considerable.

In discussing this paper Koplik said that when he took charge of the Mount Sinai Hospital Service for Children there was not a female child who was not the subject of this infection. Immediate and absolute isolation was the only means of preventing epidemics. Dr. Southworth believed that the efficiency of treatment depended upon the thoroughness with which it was carried out. Irrigations of bichloride solution, nitrate of silver, etc., were efficacious if properly carried out. He advised the introduction of a gauze wick soaked in a 5 to 10 per cent solution of **Ichthyol**, or a 4 to 10 per cent solution of **Silver Nitrate.**

Harris and Haskell[6] record a case of suppurative myositis caused by the micrococcus gonorrhœæ. They found only seven cases of this nature recorded in the literature. They considered that in these cases the bacteriological evidence was not sufficient to prove that the gonococcus was the cause of the abscesses. Their own case was that of a woman who suffered from leucorrhœa and developed abscesses in the right calf muscles and in the lumbo-sacral region. The gonococcus was demonstrated in the pus from these collections.

Vannod[7] has collected cases of non-gonorrhœal urethritis, and records a case from his own observation. In this case there was a profuse discharge four days after connection. Bacteriological examination of the discharge showed great numbers of staphylococci which on culture proved to be staphylococcus albus. After a few irrigations with **Ichthargan** the urethritis was cured. According to Porosz[8] non-gonorrhœal urethritis is not uncommon. Recovery takes place slowly and is seldom complete. Patients with an unhealed non-gonorrhœal urethritis are more susceptible to gonorrhœal infection.

Treatment.—Gross[9] relates his experience in the abortive treatment of gonorrhœa by the method used by Dr. Engelbreth, of Copenhagen. This consists in the thorough lavage of the anterior urethra with weak solutions of **Silver Nitrate** by means of the Janet irrigation method. Engelbreth uses a solution of 1 in 200, and washes with 500 to 600 cc. of this solution at a temperature of 37° C., finishing with the application of a 3 per cent solution to the fossa navicularis and meatus. This treatment is used where the infection is fresh, without any inflammation at the meatus, and the first urine is clear with simple mucous flakes. Four hours later a second lavage is made. The cure is complete in six or eight days. Englebreth publishes 26 successful cases in a series of 30.

Bierhoff[10] records the results of abortive treatment in a series of 30 cases, and claims that the low percentage (6·6, or 2 out of 30) of the cases in which posterior urethritis developed demonstrates the utility of this procedure. The author recognizes prophylaxis as the ideal treatment. For this he recommends that 2 or 3 drops of a 10 or 20 per cent solution of **Protargol** in glycerin should be instilled into the fossa navicularis as soon as possible after the suspected coitus. Bierhoff believes that many gonorrhœal infections of low virulence die out upon the epithelium of the fossa navicularis without the individual having been aware of the infection.

The sooner abortive treatment is begun the greater are the chances of success. The author uses the following method. A microscopical examination is first made. If the discharge is slight and the gonococci mainly extracellular a protargal solution of $\frac{1}{6}$ to $\frac{1}{3}$ per cent is used, but if the discharge is at all pronounced or if the greater number of gonococci are intra-cellular a stronger solution of $\frac{1}{3}$ to $\frac{1}{2}$ is used. After urination the urethra is anæsthetised by the injection of a 1 per cent solution of cocaine with an equal quantity of protargol solution of like strength. The anterior urethra is then cleansed with 150 cc. of protargol solution. The entire urethra is then irrigated after the Janet method with the same quantity of the solution, and this is repeated two or three times. The patient is given a solution of $\frac{1}{2}$ per cent protargol which he injects three or five times during the day, and retains the fluid for ten minutes each time. During the succeeding days, if the gonococci have disappeared, the strength of the solution and the quantity injected are diminished and then suspended entirely, if the result is positive, on the fourth or fifth day at latest. The injections by the patient are also diminished and suspended in like manner.

Proof of cure is obtained by the continued absence of gonococci from the shreds or urinary sediment after treatment has ceased, and the patient has been freed from dietary and other restrictions. In 30 cases thus treated Bierhoff obtained a positive result in one half. In these the gonococci had disappeared in twelve on the second day, in one on the third day, and in two on the fourth day. The duration of the treatment and the tests varied from five to twenty days. The

patients presented themselves on the first day of the discharge in 10 cases, on the second in 1, on the seventh and eighth days in 2, on the thirteenth day in 1, and on the forty-seventh day in 1 case.

Block[11] recommends the use of a 3 per cent protargol solution to be injected once daily for three days and retained for five minutes each time. If no reaction is produced on the fourth day a 4 per cent and on the fifth day a 6 per cent solution is used. On the seventh day the secretion is examined, and if gonococci are still present the abortive treatment has failed and milder measures should be adopted. A cure can be assured only if the urine is quite free from secretion or the threads are of a catarrhal nature. In this author's hands 64 per cent of 215 patients showed a satisfactory result.

Von Zeissl[12] has treated 116 cases of gonorrhœa with **Gonosan.** In only 3 cases had the drug to be omitted on account of digestive disturbance, and in only 5 cases were there complications. The author looked upon the results as very successful. During the first fourteen days all the 116 patients were treated exclusively with gonosan and then the local treatment undertaken. According to Kornfeld[13] gonosan diminishes inflammation, reduces secretion, and is analgesic and anaphrodisiac. The administration is borne over a long period of time, and it is indicated wherever balsamics are useful.

Von Hoessel and Gracher[14] mention a new organic compound of silver under the name of **Novargon**, which contains 10 per cent of silver. This is said to possess the following characteristics: Great solubility, almost neutral reaction, powerful bactericidal action, and the slight production of irritation.

Vörner[15] uses an injection containing the following ingredients: Ac. Boric 3, Liq. Alum. Acet. 10, Aqua dest. 190; in subacute urethritis and later he increases the strength to Ac. Boric 5-8, Liq. Alum. Acet. 20, and in some cases even stronger. He believes this solution should replace the harmful zinc solutions. It was sometimes necessary to fall back on protargol injections.

Porosz[16] has tried **Ionogen,** a drug recommended by Finger, which is said to contain the active principle (Wirkungsstoffe) of the kidney. Ionogen is prepared by a Buda-Pesth chemist, Richter, and has the following composition: Water 100, Suprarenal extract 0·1, Chloreton 0·5, Natr. chloral 0·7. In acute gonorrhœa the author used a 5 to 10 per cent solution of the original 1 in 1000 solution (Ionogen [1-1000] 5-10, Aq. dest. 100) with an ordinary gonorrhœa syringe. During the first day or two there was a feeling of distension; after further injections, once or twice daily, the quantity of secretion diminished. In cases of muco-purulent discharge without gonococci ionogen was very efficacious. In some cases of urethro-cystitis the author used ionogen suppositories with good results, and the drug was used in a 25 per cent solution in bleeding from the anterior urethra in cystoscopy.

Scholtz[17] recommends the use of **Peroxide of Hydrogen** in some forms of chronic cystitis as a wash of 1 in 300 to 1 in 100 and followed later by silver nitrate solutions, and also in the later stage of acute

gonorrhœa, in chronic gonorrhœa and in post-gonorrhœal urethritis. In these he uses an injection of ½ to 1 per cent. with the addition of silver nitrate solution, 1 in 4000 to 1 in 1000 for 1 to 5 minutes, and irrigations with weaker solutions.

Niessen[18] believes that the failures in treatment of gonorrhœa are due to the short duration of contact of the drugs with the inflamed membrane, and he recommends the following procedure. A tube, inside which is a wick soaked in the medicament, is passed into the urethra. The tube is removed and the wick left in place, and the projecting end of the wick is dipped in the same fluid and the medicament thus renewed. The author uses 1 per cent protargol applied for twenty minutes, and during the procedure the penis is wrapped in a carbolic dressing. The wick is removed by drawing on the projecting end.

Arhovin is the product obtained by the addition of the strong antiseptic diphenylamin to thymol benzoic acid and is non-poisonous. According to Goldmann[19] it is a useful urinary antiseptic. It is insoluble in water but slightly soluble in alcohol, ether, chloroform and in oil. Burchard and Schlockow[20] have investigated the action of arhovin and state that it is absorbed from the stomach in 15 minutes, and is excreted in the urine in a different form which is not yet fully understood. The urine after the administration of arhovin will prevent the further development of bacteria in pure culture. This peculiarity is brought about by changes which are produced in the substance in the body, since the unchanged preparation being insoluble in water is only in a certain degree a direct disinfectant. The results these authors publish do not, however, show any very striking advantages in this new drug. By internal administration they were able to bring about a cure in from five to six weeks.

Manasse[21] has used the drug in eleven cases of acute gonorrhœa, and looks upon it not as a specific for gonorrhœa or cystitis, but as a useful drug on account of its disinfecting and non-irritating properties. He has used it locally in the form of a lotion or as urethral bougies. Bindermann's[22] experience of **Helmitol** and **Hetralin,** as urinary antiseptics, is that in acute gonorrhœa they have no influence upon the course of the disease, but that they are useful drugs in chronic urethritis and especially in non-gonorrhœal cystitis.

Runae and Merzbach[23] are strong advocates of the internal administration of **Gonosan.** It is given in capsules, 2 of which are taken twice or thrice daily immediately after meals, or half an hour after a meal in warm milk, and in this form does not cause gastric disturbance. Renal irritation has not been noted. According to these authors gonosan has an analgesic effect and by limiting the growth of the gonococci diminishes the discharge. It has also an anaphrodisiac action.

Lokal[24] looks upon gonosan as the best of the drugs given in gonorrhœa, and remarks upon its property of diminishing pain. Spitzer[25] has used the preparation in 100 patients (50 acute anterior urethritis, 30 total urethritis, 20 urethro-cystitis) and prefers it to

other drugs on account of its sedative effect. Rapid clearing of the urine is not brought about. Reifsuer[26] has treated thirty cases with this drug and prefers it to the pure sandal-wood oil in cases with very acute symptoms. All these authors note that the drug should not replace but should accompany local treatment.

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GRAVES' DISEASE. (*See* GOITRE, EXOPHTHALMIC.)

GUNSHOT WOUNDS. *Priestley Leech, M.D., F.R.C.S.*

Effects of Smokeless Powders when fired at Close Quarters.—The distance at which a firearm has been discharged may become of immense importance in a medico-legal case, as in the trial in Italy of Lieutenant Modugno for the murder of his wife with a Mauser pistol. In this respect some experiments of Alexander B. Johnson[1] are of great interest. He fired various pistols and various smokeless and black powders at a body, at varying distances. His conclusions are :—

1. Powder marks upon the skin and clothing, produced by smokeless powder, are much less distinct and definite than those caused by black powder.

2. With the weapons used in these experiments (Mauser, Colt, and other pistols) such marks cease to be produced when the distance exceeds one foot, and the shot is fired at the naked skin.

3. At a distance of three inches or less, powder marks may be present, but they will always be faint, and may in many instances be wiped away from the skin with a wet or dry cloth.

4. If the shot be fired at a part of the body covered with clothing, no powder marks at all will be found upon the skin. The clothing will never be scorched, no matter how near the weapon is held.

If the clothing be wool, no powder mark is likely to be detected upon it, even at the closest range, unless under the microscope. If the clothing be of linen, a faint mark may be found upon it if the weapon were held at a distance of three or four inches or less. If the distance much exceeded this, no mark could be produced. Microscopic examination might in certain instances enable a positive statement to be made as to the kind of ammunition that had been used.

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HÆMOPTYSIS. (*See* HÆMORRHAGE.)

HÆMORRHAGE (Treatment of). *Robt. Hutchison, M.D.*

Hare[1] has used inhalation of **Amyl Nitrite** with great success in the treatment of hæmoptysis. Of 13 attacks so treated (12 phthisical and one cardiac) all but one ceased within three minutes after inhalation. He believes that the drug acts by suddenly lowering the peripheral resistance in the systemic arterioles, thus reducing the blood pressure in the pulmonary circulation indirectly, by allowing of the more easy escape of blood into the peripheral circulation. In only a few cases was there any recurrence of the hæmorrhage, in spite of the evanescent action of the drug; this rather surprising result is probably due to the heavy fall of blood pressure lasting long enough to allow of plugging of the bleeding point by clot.

Lawrance-Burke[2] has had successful results in hæmoptysis and other forms of deep-seated hæmorrhage, from the use of **Adrenalin Chloride** in doses of 5 minims given at intervals of three hours.

Mathieu and Passier[3] recommended for intestinal hæmorrhage in typhoid fever, hot water and **Calcium Chloride** administered by irrigation. The amount of calcium chloride in twenty-four hours which is given to a patient is 1 gram by mouth and 3 grams by irrigation. They have found that the calcium chloride is well tolerated. The duration of treatment varies according to the dose. Four days is considered long enough by certain authorities. Others continue it for a longer time, when the doses are very small. The elimination of the salt is sufficiently rapid, so that it does not accumulate in the organism. It is well always to find out first if the patient has normal kidneys before giving it. It is beneficial to clear the intestine of extravasated blood, as one cause of intoxication is removed. The irrigations should be given carefully and slowly, about a litre of water being used, the patient in dorsal decubitus, and the operation occupying about fifteen minutes.

REFERENCES.—[1]*Lancet*, Aug. 20 & Oct. 1, 1904; [2]*Brit. Med. Jour.* June 4, 1904; [3]*Rev. Fr. de Méd. et Chir.* March 20, 1905.

HÆMORRHOIDS. (*See* RECTUM.)

HEART (Diseases of). *Alfred H. Carter, M.D.*

Cardiac Insufficiency.—Pratt[1], in a careful and well reasoned paper on the causes of such insufficiency, says that no justification exists for attributing cardiac insufficiency to nervous disturbances or exhaustion, of the nature of which we know nothing, unless demonstrable lesions in the myocardium have been excluded by a thorough microscopic examination. The circulatory disturbances which occur during the height of the febrile period in the infectious diseases are probably due less to cardiac insufficiency than to paralysis of the vaso-motor centre in the medulla. The blood pressure falls, the flow of blood is slowed, the heart is only partially filled, and finally the circulation sinks to such a low level that life cannot be maintained. Nor again,

contrary to generally accepted teaching, does he admit that there is any evidence to show that fatty metamorphosis of the heart produces cardiac insufficiency. In the light of present knowledge, other anatomical alterations, especially coronary sclerosis, and acute interstitial myocarditis, must be regarded as the most common causes of heart failure. Nevertheless, cardiac insufficiency may be due to acute over-distension of the heart produced by sudden and violent bodily exertion. In these cases of heart strain the nature of the anatomical or chemical changes is unknown.

Heart-strain in Growing Boys.—Lambert[2] doubts whether the heart of the truly healthy boy ever breaks down as the result of athletics as practised in the great schools. There must have existed some cardiac insufficiency, either inherent or due to some condition such as anæmia or recent influenza. Tendency to recurrence is common to all cases. There may or may not be constant symptoms or signs of inefficiency. The prognosis must be guarded, and every return to active exercise looked upon as an experiment. The heart may be strong enough for a life-work that does not entail great stress, but not strong enough to stand an anæsthetic or some acute illness. A good muscle may compensate for a faulty valve, but there can be no compensation when it is the myocardium itself which is at fault.

The Neurotic Heart.—Beverley Robinson[3], in a paper on this subject, recognizes four groups of cases: (1) Those in which there is evidence of neurasthenia or hysteria or of some other well defined nervous disease; (2) Those associated with organic changes in the heart or vessels; (3) Those in which there is gastric, intestinal, or pelvic trouble, of which the cardiac disorder is the reflex; (4) Cases of obscure origin. He specially emphasizes the following conditions and facts, which do not seem to him to be sufficiently well recognized.

1. An apparent or evident slight cardiac enlargement with or without dilatation, and it may be slight hypertrophy, occasioned by or proceeding directly from a cardiac neurosis.

2. A condition of secondary anæmia, as shown by careful microscopic blood examination, with count and differentiation of white corpuscles, which remains stationary for a long while, despite the use of chalybeates and most rational treatment from every standpoint.

3. The absolute or relative uselessness of digitalis, notably, unless the heart muscle is involved; and even in these instances, for acute manifestations of weakness or failure, **Strophanthus** is far more useful.

4. Impaired nutrition, at a given period, of the muscular walls of the heart under the immediate dependence, probably, of diminished nervous energy, gives rise to slight cardiac dilatation at times, which subsequently, under judicious treatment, remains stationary as to amount, and becomes functionally compensated.

Percussion of Spine in Cardiac Disease.—Signorelli[4] claims that in some cases investigation by this means gives useful information. The patient sits with the shoulders bent forward, and the vertebræ are percussed firmly. In normal conditions, the first four dorsal vertebræ

give a clear, high pulmonary sound, not very intense ; the remainder of the vertebræ give a deeper and more intense sound. The method consists in comparing the sound obtained by percussing each vertebra with that obtained by percussing the other vertebræ and the back of the thorax. The deficiency of resonance is a relative deficiency. Thus, if the first six dorsal vertebræ give the same sound, he concludes that there is a deficiency of resonance over the fifth and sixth vertebræ. Deficiency of resonance over the spines of the first two or three dorsal vertebræ shows enlargement of the aorta ; over the fourth, fifth and sixth, or sometimes over the fifth alone, it shows increased size of the auricles, especially the left auricle, and therefore probably mitral disease ; over the seventh and eighth it shows increased size of the ventricles, and especially of the left ventricle. The auricular dullness is a more frequent and constant sign than the ventricular, because the axis of the heart is directed downwards and forwards. These signs may also be given by pericardial effusion, or they may be prevented from manifesting themselves by pulmonary emphysema separating the heart widely from the vertebral column.

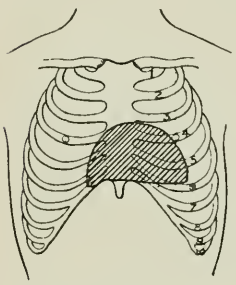

Fig. 34.
Normal cardiac dullness in the upright position.

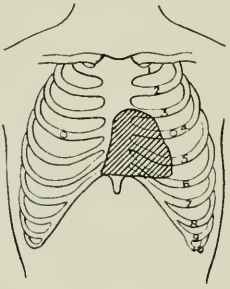

Fig. 35.
Normal cardiac dullness in the recumbent position.

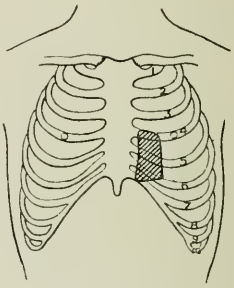

Fig. 36.
Cardiac dullness in a case of cancer where it has not been yet obliterated.

Cardiac Dullness in Cancer.—Gordon[5] believes that the obliteration (approximate or complete) of the superficial cardiac dullness has some diagnostic value in cases of cancer. After recording certain cases, he submits the following conclusions (setting aside cases where special causes exist, accounting either for the obliteration of the cardiac dullness, or the prevention of such obliteration) :—

1. Great reduction or obliteration of the normal cardiac dullness is common in cases of cancer, particularly in cancers of the alimentary canal and in their late stages. (*See Figs.* 34—36.)

2. This loss of cardiac dullness does not seem to be found in the earliest stages of a cancerous case, but may precede cachexia, marked wasting, and loss of skin elasticity.

3. It is rarely observed in non-cancerous cases.

4. It is rarely absent in the later stages of cancer of the alimentary canal.

5. It does not seem to occur in cases of sarcoma.

6. In doubtful cases its presence is highly suggestive of cancer; its absence is slightly suggestive of the absence of cancer, if the symptoms under consideration have lasted for several months.

Myocarditis.—Geo. Carpenter[6] reports a case of uncomplicated myocarditis in a girl, aged eight years, followed by cardiac failure and sudden death. He has reported other cases in previous papers. Some of them are undoubtedly rheumatic; others again are post-diphtheritic; while in a third group no cause may be found. However it arises, it is a highly dangerous condition; though, with careful treatment, recovery may and sometimes does take place.

Mitral Stenosis.—Raymond Crawfurd[7] has a useful article on this subject, based upon the records of 304 cases. Among the points discussed by the author we note the following. Mitral stenosis without regurgitation occurs in only 14 per cent of the cases. It is essentially a disease of adolescence; most common in females (78·5 per cent): and generally of rheumatic origin. Association with arteriosclerosis and granular kidney is not uncommon, and such cases are of an unfavourable and progressive type. Only two cases of the series were associated with tubercular disease. The lesion always begins in the valvular cusps, never in the orificial ring. The button-hole deformity is common, while the "funnel" is rare. The left auricle is almost invariably dilated and hypertrophied. The left ventricle is not reduced in size, except relatively to the right. In many cases it is hypertrophied, with some dilatation, though it is difficult to explain. Pulmonary emboli were present in 25 cases, and systemic emboli in 19. Hæmoptysis was present in 32 per cent of mitral stenosis, as against 14 per cent of mitral regurgitation, and 20 per cent of double mitral disease. In 78 out of 112 autopsies the liver was enlarged and of the "nutmeg" type. Ascites occurred usually prior to œdema of the legs. Cardiac pain was not uncommon. Pulsation in the second left intercostal space is not synchronous with the apex-beat, and is probably due to auricular systole. A thrill was felt in about one-third of the cases. The slower the heart-beat, the longer and louder is the presystolic murmur, which becomes shorter and less distinct as the disease advances. The sharp rap of the first sound with which the murmur ends, the author attributes to the sharp and quick contraction of the left ventricle on an ill-filled cavity. Pulmonary regurgitation is occasionally found.

Treatment.—**Cod-liver Oil, Arsenic, Phosphates,** and **Iron** are indicated in the early stages, with nourishing diet, and life in the open air. Violent exertion must be forbidden. In women, marriage is unfavourable. Cardiac irritability and pain require physical and mental **Rest,** with **Bromides,** and **Belladonna Plaster** over the heart. With failing compensation **Digitalis** is indicated.

Pulmono-arterial Diastolic Murmur.—There is no doubt that, as a result of high blood pressure in the pulmonary artery, a murmur of this kind is occasionally heard. Such increased pressure may be

caused either by obstructive pulmonary disease, or by mitral disease, Batty Shaw[8], in a lecture, states :—

1. By reason of the presence of this murmur, care is needed lest the diagnosis be made of double mitral disease combined with aortic regurgitation, instead of double mitral disease only.

2. If the functional murmur of high tension in the pulmonary artery is heard, and a presystolic murmur is heard at the apex, there is a risk of describing the case as one of aortic regurgitation associated with a Flint's murmur heard at the apex.

3. If the patient be examined in the erect posture, the murmur of high pulmonary tension may alone be heard, and be translated as an indication of aortic regurgitation. Recumbency will, however, change the whole picture, and reveal the presence of an obstructive or of a double mitral murmur.

4. The murmur of functional pulmonary regurgitation heard at the xiphisternum may be mistaken for an exocardial sound.

5. The murmur of functional pulmonary regurgitation is notoriously changeable, being present at one time and absent at another. This has led, in one case at least, to the erroneous diagnosis of pericarditis.

6. Finally, in cases of mitral stenosis, it is said that the diastolic murmur is frequently late diastolic or presystolic when auscultation is practised over the apex, and that it changes to an early diastolic murmur when the stethoscope is placed internally to the apex-beat ; this change is probably due to the loss of audibility of a presystolic murmur which is strictly limited to the apex, and to the recognition of the functional pulmonary regurgitant murmur which may be heard internal to the apex-beat, or as above stated at the xiphisternum.

Cardiac Disease and Pregnancy.—Mackenzie[9] points out that the chief forms of circulatory disturbance incidental to pregnancy are: (1) Limitation of the range of cardiac reserve power ; 2) Changes in the rate and rhythm of the heart ; (3) Dilatation of the right side of the heart ; (4) Tendency to œdema of the bases of the lungs ; (5) Engorgement of the veins of the leg ; (6) Marked pulsation in the veins of the neck. As to the undesirability of marriage, when there are clear signs of failing compensation, no woman should incur the burden and risks of pregnancy. In the absence of clear evidence of failing compensation there are other features which will guide to a safe conclusion : (*a*) When the apex-beat consists of a sustained forward thrust (and especially if not seriously displaced down and out) the outlook is favourable ; but if the apical movement is characterized by retraction, and due to the right ventricle, it points to serious dilatation ; (*b*) Mitral stenosis is of much graver significance than mitral regurgitation mainly because of its progressive behaviour ; (*c*) The disappearance of the auricular wave from the jugular pulse, indicating auricular engorgement and paralysis, is of serious import. With fair compensation, with either a systolic or presystolic murmur, with an apex-beat within the nipple line, due to the left ventricle, pregnancy need not be forbidden.

Nicholson[10] is convinced of the advantage, in the later stages of pregnancy with mitral disease, of small doses of **Mercury** (calomel or blue pill), about twice a week, or oftener if much dropsy. When the heart is seriously embarrassed the use of vaso-dilator remedies, such as the **Nitrites**, is more rational than resorting to digitalis. He quotes a case in which **Thyroid Extract** (gr. 15–30 daily) as a vaso-dilator was of the greatest value, combined with an occasional mercurial. He expresses a caution against checking hæmorrhage hastily during the third stage of labour with marked cardiac engorgement, because the loss of blood is beneficial.

Endocarditis and Mumps.—Bearing in mind the rarity of this complication in mumps, the record by Tatschner[11] of four cases of endocarditis in the children of one family, following on mumps, is interesting. All the children were attacked with mumps in November, 1903. In January following, all but the eldest girl (who remained in excellent health) suffered from a catarrhal affection which was prevalent at the time, but was not considered by the author to be influenzal. At this time the character of the pulse in one of the girls led to the examination of the heart, when a mitral systolic murmur was heard. In March the other three children became affected. All recovered. The author had repeatedly examined the children before the parotitis, and had found no trace of cardiac disease.

Cardiac and Vascular Complications and Sequelæ of Typhoid Fever.—Thayer[12] deals with this subject in an exhaustive paper, based upon a survey of 1,458 cases. Briefly stated, his conclusions are as follows: (1) There is frequent grave weakening of the heart-muscle, often leading to mitral insufficiency, generally disappearing with convalescence. In over one-fifth of these there was evidence of organic disease. The average blood pressure in old typhoids was increased. (2) Endocarditis is more frequent than generally supposed. (3) Only three cases of pericarditis were noted. (4) Phlebitis and venous thrombosis occurred in 2·6 per cent of all cases. Chills otherwise unexplained, especially if associated with leucocytosis, should suggest phlebitis. It is almost always confined to the lower extremities, especially in the femoral vein of the left leg. (5) Arteritis and arterial thrombosis may be met with, and is most common in the cerebral vessels, in the third week or later. (6) Focal arteriosclerosis is not uncommon.

Cardiac Dyspnœa.—The best means at our disposal for dealing with cardiac dyspnœa are, according to Lauder Brunton[13], absolute **Rest**, **Massage**, and **Digitalis** (especially the old combination with squill and blue pill). Where the heart is failing, **Digitalin** and **Strychnine** may be given together subcutaneously. Further, he speaks favourably of **Oxygen Inhalations**, and **Tapping** of dropsical cavities and limbs. For immediate relief, nothing succeeds so well as **Opium** (either by mouth or rectum) or a subcutaneous injection of morphia. In connection with the prejudicial effect of flatulence, attention to the diet is of the greatest importance.

Therapeutic Effects of Nitroglycerin.—As the result of many experi-

ments, Loomis[14] believes that this drug cannot be relied upon as a trustworthy vaso-dilator, and offers the following general conclusions :—

1. The usual dose of nitroglycerin ($\frac{1}{100}$ gr.) is too small to produce any effect in pathological conditions ; $\frac{1}{50}$ gr. is a minimum dose.

2. It is a perfectly safe drug to use. Even in the large and repeated doses used he had never seen any ill effects.

3. High arterial pressure in man is not perceptibly affected by it, nor is dilatation of the blood-vessels apparent.

4. Its effects are very transient, as shown by experiments on dogs, and the ordinary dose of $\frac{1}{100}$ gr. every four hours could not possibly have any effect on the arteries.

5. Nitroglycerin is said to increase the quantity of urine in chronic Bright's disease, but after keeping accurate records of the daily amount of urine passed, he could not satisfy himself that any increase seen was due to this drug.

6. In conditions due to arterial spasm so-called, such as angina pectoris, migraine, and asthma, nitroglycerin may be of benefit, in full doses often repeated, but not in arterial sclerosis, where the arteries themselves are more or less changed.

On the other hand, **Choral Hydrate,** in 5-grain doses every four hours, has acted most satisfactorily, in relaxing the arteries and reducing the blood pressure in arteriosclerosis, and yielding very uniform results.

Dilatation.—Fleming[15] reports cases usually considered to be outside the sphere of Nauheim methods, which have done well. He makes no use of baths, but employs, for successive periods, generally of ten or twelve days each, **Massage, Passive Movements,** and limited **Resisted Exercises,** in the order given. The exercises were limited to such movements of the arms and legs as could be carried out with the patient in bed, and no particular movements were ordered. A guide to the length of each application was obtained by noting the effect on the patient, all fatigue being carefully avoided. After the period of resisted exercises, the patient was allowed to get up, and undertake a little slow walking.

Treatment of Heart Complications in Diphtheria.—White and Smith[16], as the result of a clinical study of 946 cases, assert that rest in bed and good nursing are of chief importance, and that drugs play but a small part. It is usually safe to allow mild cases to get up at the end of two weeks, provided the first sound is strong and the heart is not dilated. If there is a murmur, and the action is irregular, active exercise should be forbidden. Digitalis and alcohol rarely do good. **Strychnine,** in $\frac{1}{60}$ grain doses every four hours, is useful. Cases with persistently rapid pulse should be kept in bed at least four or five weeks, and then only allowed to sit up for a short time under careful supervision. In cases with galop rhythm, absolute **Rest** is essential, with a **Liquid Diet.** At the first occurrence of vomiting, rectal feeding should be resorted to, with cracked ice by the mouth to relieve thirst. strychnine (gr. $\frac{1}{60}$ to $\frac{1}{40}$ every four hours) is useful, and with vomiting,

should be given subcutaneously. **Cocaine** (gr. $\frac{1}{12}$ every four hours in iced water) sometimes relieves vomiting. **Morphia** (gr. $\frac{1}{16}$ to $\frac{1}{8}$ according to age) is useful to relieve restlessness.

Modes of Death in Heart Disease.—The following are some of the chief points in a lecture by Morrison[17] on this subject:—

1. Sudden death may occur quite unexpectedly, or after gradual failure beyond all hope of recovery. In both cases the final event is the same—failure of the left ventricle in diastole. When, in a case of sudden death, the left ventricle is found to have stopped in systole, it is the result probably of blood or brain failure rather than muscular failure.

2. Rapid death may result from rupture of heart or aneurism, rupture of a valve or chordæ tendineæ, embolism of one of the larger arteries of the heart, or pulmono-arterial embolism. In these cases, it is the *suddenness* of the demand made upon the circulation, to adapt itself to altered circumstances. These are all the phenomena of congestive stasis which we find in those dying gradually, but exaggerated by the overwhelming acuteness of the lesion.

3. Gradual death is characterized by a steadily progressive asphyxia, in which the right side of the heart is engorged, while the left ventricle is comparatively empty.

Practically it is important to form an opinion in every given case of cardiac failure, as to whether we are dealing with a tendency to syncope associated with systole and emptiness, or with diastole and fulness of the left ventricle. In the former the only measure likely to be of service, apart from the recumbent posture with the head low, artificial respiration, and rhythmical tongue traction, is prompt **Venesection**, except of course when the condition is due to hæmorrhage. In the latter, **Strychnine**, **Digitalin**, and **Nitrites** are indicated. In sudden failure of the heart during an abdominal operation, prompt **Manipulation** of the heart through the diaphragm might be (and has been) carried out with success.

References.—[1]*Johns Hop. Hosp. Bull.* Oct. 1904; [2]*Med. Chron.* Feb. 1905; [3]*Amer. Jour. Med. Sci.* June, 1905; [4]*Brit. Med. Jour.* June 25, 1904; [5]*Lancet*, April 9, 1905; [6]*Ibid*, Oct. 1, 1904; [7]*Pract.* June, 1905; [8]*Clin. Jour.* July 27, 1905; [9]*Brit. Med. Jour.* Oct. 8, 1904; [10]*Ibid*; [11]*Ibid*, Oct. 22, 1904; [12]*Johns Hop. Hosp. Bull.* Oct. 1904; [13]*Pract.* June, 1905; [14]*Med. Rec.* Mar. 18, 1905; [15]*Scot. Med. and Surg. Jour.* May, 1905; [16]*Boston Med. and Surg. Jour.* Oct. 20, 1904; [17]*Clin. Jour.* June 28, 1905.

HEART (Suture of). *Priestley Leech, M.D., F.R.C.S.*

Several cases have been reported during the past year. Vogel[1] reports one of punctured wound of the heart and left pleura treated with good results by suturing, in a patient sixteen years of age. The wound was two centimetres in length, in the right ventricle.

Giuliano[2], of Catania, mentions a case in a patient eighteen years of age where he operated for a wound of the free margin of the right auricle, which involved the coronary artery; the latter could not be ligated, but sutures of silk were passed during diastole, and a gauze

drain passed into the pericardium ; the patient recovered. Somerville[3] also records a successful case of wound of the left ventricle where there was also another wound of the pericardium and pleura ; the man had introduced a knife into the thorax twice, the first time between the fifth and six ribs, and the second time between the fourth and fifth ribs.

Renon[4] records a fatal case where the sutures were all right but the patient had advanced tuberculosis ; Smith another that died seven days after operation from tuberculosis. Stewart[5] had a case where the coronary artery was wounded and which recovered. A round-curved intestinal needle is generally recommended for suturing the heart. The wounding of the coronary artery adds to the gravity of the case.

References.—[1]*Centr. f. Chir.* No. 22, 1904 ; [2]*Gaz. deg. Osped.* Mar. 12, 1905 ; [3]*Lancet,* Nov. 5, 1904 ; [4]*Trib. Méd.* 1904, No. 3 ; [5]*S. Calif. Pract.* Sep. 1904.

HERNIA. *A. W. Mayo Robson, D.Sc., F.R.C.S.*

Radical Cure of Hernia in Children.—An interesting account of the treatment of hernia in children is given by W. T. Bull and W. B. Coley[1]. They describe the results of 1424 operations performed between 1891 and 1904. All but twenty were on children under the age of fourteen years. It is the custom of the authors to treat all cases of hernia in children, with certain few exceptions, for a period (usually one or two years), with a **Truss**, before advising operation. If at the end of this time no improvement is observed, operation is advised. Under the age of four years, a very considerable number of cases of inguinal hernia, and nearly all cases of umbilical hernia, can be cured by truss treatment. Of the 1424 operations reported, 1354 were for inguinal hernia, 35 for femoral, 10 for umbilical, 8 for ventral, 2 for congenital hernia of the umbilical cord, 2 for epigastric and 1 for lumbar hernia. The great majority of the operations for inguinal hernia were performed according to Bassini's method, using chromicised kangaroo tendon for suture material. Twelve operations were performed for strangulated hernia, and the cases show that strangulation is more common during the first two years of life than during the next decade. The seat of strangulation in every instance was the constriction by the tight external ring. Eleven relapses in all were noted, and the authors conclude that the majority of recurrences take place during the first six months after operation, and about 90 per cent occur during the first year. An interesting part of the report is the comparison of cases operated with and without rubber gloves. Suppuration occurred in 4·4 per cent without gloves, and 2·3 per cent with gloves. There were four deaths in the series.

In describing the method for the cure of femoral hernia, De Garmo[2] gives the results of 110 operations. In 28 of these cases strangulation existed at the time of operation. Only 1 death occurred, and that was an old woman of seventy years, who had suffered from strangulated hernia for three days. In the series there was 1 case only of actual recurrence. The method of closing the canal

was by suture of Poupart's ligament to the tissues on the ramus of the pubis. The needle is passed through all the tissues on the ramus, and takes up the periosteum of that bone. Three or four sutures are used, the material being kangaroo tendon.

Hernia of the Bladder complicating Inguinal Hernia.—Shepherd[3] points out that in 1 per cent of cases of inguinal hernia there is an accompanying hernia of the bladder. Wounds of the bladder in this operation are not so very uncommon, more common indeed than the number of published cases would lead one to believe. Shepherd gives details of four cases of hernia of the bladder, in all of which the extraperitoneal portion of the viscus protruded. As the result of his experience, Shepherd states that there are certain points which would enable one to avoid mistakes. First, the inguinal opening is always large and out of proportion to the size of the protruding intestines. Second, the cord is not intimately associated with the sac of the tumour, but can be readily held aside without dissection; it is usually to the outer side of the tumour. Third, in two of his cases the hernia was a direct one, and in all had been produced by a sudden strain. Fourth, there is difficulty in finding a neck to the sac, for the anterior portion of the sac stretches away towards the pubis, and is perhaps covered by granular and very vascular fat.

Strangulated Hernia of the Appendix.—Tapie reports a case of strangulated appendicular hernia, and discusses the question whether, in cases of this kind, strangulation be the primary morbid condition or the result of appendicitis. He concluded that strangulation of a herniated appendix may occur quite independently of inflammation of this organ. This herno-appendicular strangulation, he states, may give rise to very serious symptoms, and result, in a short time, in acute appendicitis. The operative treatment is discussed in the paper.

Broca and Daniel[4] report a case where a mesenteric cyst was found in the sac of an inguinal hernia.

A remarkable case of *Diaphragmatic Hernia of the Stomach* with torsion of the small omentum and volvulus of the stomach is recorded by Lawford Knaggs[5].

References.—[1]*Med. Rec.* March 18, 1905; [2]*Ann. Surg.*; [3]*Ibid*, Dec. 1904; [4]*Brit. Med. Jour.* Aug. 26, 1905; [5]*Lancet*, Aug. 1904.

HERPES. *Norman Walker, M.D.*

Leale[1] thinks too little stress has been laid on the value of the application of **Counter Irritants** over the roots and trunks of the nerves involved. These should be applied early, before even the papules have appeared, and specially over the points of emergence of the nerve trunks and close to the spinous process of the vertebræ. The treatment, in his opinion, shortens the duration and lessens the pain. Is it not, however, the case that this treatment is often unintentionally adopted for the neuralgic pain in the side preceding a herpes zoster, without apparently diminishing the severity of the attack?

Howard Morrow[2] generally adopts the usual method of applying dusting powder in mild cases. Although ointments tend to produce rupture of the vesicles, a condition not to be desired, nevertheless applications such as **Zinc Ointment** 1 part to **Carron Oil** 3 parts give a great deal of relief, particularly in the crusting stage. **Menthol** may be added if necessary. **Antipyrine** or **Mild Galvanic Currents** give most benefit in the neuralgic pains that frequently follow, and when these are severe injections of **Morphia** may be given. He also praises the value of **Ethyl-Chloride Freezing** in painful cases. A piece the size of a dollar is frozen where the nerve emerges from the spinal column, and the relief thus given may last for a day or two. The remedy can be reapplied in a few hours.

References.—[1]*New York Med. Jour.* Aug. 19, 1905; [2]*Jour. of Cut. Dis. N.Y.* April, 1905.

HIP (Dislocation of). *Priestley Leech, M.D., F.R.C.S.*

After a study of 23 cases, in which there was a central dislocation of the hip in addition to a fracture of the acetabulum, Arregger[1] comes to the following conclusions :—

1. Central luxation is the rarest form of dislocations of the hip, and is produced by the rapid action of a great force exerted upon the trochanter, driving the head of the femur through the acetabulum into the bone pelvis.

2. The principal symptoms are :—

(*a*). External rotation of the leg, which can be easily corrected, and as a rule painlessly, but tends to recur slowly when the correcting force is removed.

(*b*). Shortening of the distance between the symphysis and the trochanter; situation of the trochanter in the axillary line; simultaneous presence of an intraperitoneal hæmatoma.

(*c*). Projection of the head of the femur and fragments of the acetabulum on to the true pelvis.

3. Diagnosis is based on rectal or vaginal examination, combined with the evidence of a skiagraphic picture of the bony pelvis.

4. (*a*) If possible replace the head of the femur and put on lateral and longitudinal extension, with early resort to orthopædic treatment, or a plaster case extending well above the border of the ribs may be applied.

(*b*). If the head is irreducible, elevation with splints, or extension should be employed.

(*c*). Where the thigh is in very bad position, or where there is evidence of pressure of the femoral head on the pelvic viscera, the pelvis should be resected and the head of the femur replaced.

5. In mild cases properly treated, the prognosis is favourable. Recovery requires several months, and disability is permanent. In severe cases, death usually results in a short time from shock, sepsis, or injury to the viscera.

Lewis[2] reports a case of double traumatic dislocation of the hip.

The patient, a miner, eighteen years of age, was thrown forwards off a coal car on to his hands and knees, and the coal car struck him behind on the sacral region, thus producing a double dorsal dislocation. Only thirty-two cases of this injury have been reported; a list of them is given in Lewis's article.

REFERENCE.—[1]*Deut. Zeit. f. Chir.* Feb. 1904; [2]*Ann. of Surg.* Nov. 1904.

HOUSEMAID'S KNEE. *Priestley Leech, M.D., F.R.C.S.*

Hoffman[1] practises the following operation. Puncture the enlarged bursa, thoroughly scarify its inner surface, express its fluid contents, bring the inner walls together, and keep them in contact by means of a compress and strips of adhesive plaster until their raw surfaces have contracted adhesions, and thus obliterated the bursal cavity. No anæsthetic is required, and the patient need not be kept in bed. He has successfully treated 104 cases by this method.

REFERENCES.—[1]*Amer. Jour. of Orthop.* Oct. 1904; *Brit. Med. Jour.* Jan. 15, 1905.

HYDROCELE. *Priestley Leech, M.D., F.R.C.S.*

Laurence[1] advocates, as a safe and nearly painless operation, the introduction into the hydrocele sac of an aseptic, absorbable, solid substance; the ideal substance is **Sterile Catgut.** The hydrocele is tapped with a small trocar under local anæsthesia, the fluid is thoroughly evacuated, and through the cannula is pushed nine or ten inches of No. 2 or 3 sterile catgut. The cannula is then withdrawn, and the opening is sealed with collodion or adhesive plaster. The patient is kept quiet for eight hours. There is some swelling, but this settles down later.

REFERENCE.—[1]*Yale Med. Jour.* Sep. 1904.

HYPERTRICHOSIS. *Norman Walker, M.D.*

Balmanno Squire[1] recommends that the hair should be pulled out of each follicle before the needle is introduced. The opening must be carefully localized, and then the eye-end of a No. 12 sewing needle applied to the mouth of the follicle to sear its edges slightly. Subsequently the needle will, he states, be found to go in easier, and the scarring produced is much less than in the method generally adopted. He calls this method cnelectrolysis. When hairs are very numerous they are best removed by X-rays, and this can be done as described under ringworm, but the process requires to be repeated in most cases once or twice and it may be oftener. Some pigmentation of the skin, atrophic wrinkling to a slight extent, and a readiness of the part to flushing may result. Other cases escape these drawbacks, but the possibilities should be explained and treatment carefully applied.

REFERENCE.—[1]*Lancet,* Feb. 25, 1905.

IMPETIGO CONTAGIOSA. *Norman Walker, M.D.*

C. W. Allen[1] reiterates a view frequently held that it is rare to find this condition without the co-existence of pediculi.

Treatment, in that case. must first begin by removal of the pediculi. Crusts are then to be removed by **Poultices of Potato Flour,** or washed

with **Green Soap** and 1 in 1000 **Perchloride of Mercury Solution.** For small areas 50 per cent **Ichthyol** in water, or 5 to 10 per cent ichthyol in collodion, can be painted on. Ointments do not act so well as lotions, in his opinion.

The rest of the face may be dusted with **Salol,** diluted with some neutral powder.

For the scalp 10 per cent **Precipitated Sulphur,** and ½ to 1 per cent red **Sulphide of Mercury** in **Vaselin** are useful.

There are, we agree, certain cases that may necessitate this severe treatment, but generally after removal of crusts and pediculi the *frequent* application of 5 grains to the ounce of **Hydrarg. Ammoniati** in vaselin will cure most cases in three days.

REFERENCE.—[1]*Med. Record,* New York, May 20, 1905.

INFANT-FEEDING. *G. F. Still, M.D.*

Breast Feeding.—The infantile mortality of this country has decreased but little, according to Newsholme[1], within the past half century ; and one contributing cause to this mortality is no doubt the wide prevalence of artificial feeding. Handfield-Jones[2] states that enquiry at lying-in hospitals shows that the percentage of women in these institutions who do not suckle their children is very small, probably not more than about 10 per cent, whereas among the upper classes it would seem that breast-feeding is becoming more and more rare. But it seems likely that statistics of women delivered of children outside the lying-in hospitals, and even of these institution cases if observed after they have left the hospital, would probably show that very few continue the breast-feeding for more than a few weeks.

Bunge[3] of Basel, found only 519 women out of 1629 to be capable of nursing their offspring for 9 months. Enquiry into family history showed that the daughter of a mother who could not nurse her own children is also commonly incapable of suckling. If the mother was capable of nursing, but the daughter incapable, it was found that the father was often a drunkard (in 78 per cent of such cases). Where both mother and daughter had been incapable of nursing, the daughter was found to suffer from some nervous disorder in 25·9 per cent of the cases. Bunge shows also that if this function is once lost in a family it is not likely to be regained in subsequent generations. He concludes that the power of suckling is destined to disappear altogether eventually.

If the supply of breast-milk is deficient in amount, it is a common practice to stimulate the flow by giving stout to the mother. Handfield-Jones (loc. cit.) says that in many cases it does harm by disturbing the chemical composition of the milk, so that it disturbs the infant's digestion. He quotes observations showing that if alcohol in considerable amount is taken it passes into the milk ; some change also in the fat and proteids has been observed whereby the milk is rendered less nutritive. If stout is to be ordered at all it will probably be more useful in the latter half of the suckling period than in the early months.

A new lactagogue has been introduced by Brink[4], called **Lactogol**

(*see* p. 30). This is the powdered extract of the cotton plant, a fine yellowish powder, pleasant to taste, not soluble in water, but easily emulsified in milk. A teaspoonful given three times a day usually increases the milk after three or four days, sometimes on the first day. It is employed successfully by farmers to increase the milk supply of their cows; hence its application to women.

A curious phenomenon sometimes observed in lactation is a return of the mother's milk to the state of colostrum. This, Spolverini[5] attributes to emotional disturbance, and sometimes to menstruation or pregnancy, or to irregular feeding. It sometimes gives rise to some intestinal disturbance in the infant, but this is of short duration, so that there is no necessity to do more than interrupt breast-feeding for a short time.

It is not every disease in the mother which necessitates weaning; in particular albuminuria has been held by Budin and others as no contra-indication to suckling. Cozzolino,[6] however, states that infants nursed by albuminuric mothers have been found often to do badly when prolonged observation has been made. Eclampsia, tetany, fatal hepatitis with jaundice, and also diffuse œdema, have been observed in the infant, and have been supposed to be due to some toxic condition of the milk from albuminuric mothers. If, therefore, the infant be suckled by such a mother, the milk should be discontinued on the first symptom of any disturbance in the infant.

Wet-nurses.—These are, as Walker[7] points out, the luxury of the well-to-do, and until we have some such system as that obtaining in Prague and Vienna, where wet-nurses are obtained from large institutions, and licensed, and thoroughly examined before being sent to a case, the character of our wet-nurses as regards freedom from disease will often be so doubtful that people hesitate to make use of them. Handfield-Jones considers that the wet-nurse should be between 20 and 30, and that the milk of a very young woman, or an advanced multipara, is likely to disagree; he also thinks it important that her child should be about the same age as the foster-child. He mentions also that excellent wet-nurses can often be obtained from amongst the peasant class in the north of France, and that an agency exists in Paris through whom they can be secured.

Weaning.—Pinard[8], discussing the date of weaning, says it should be not later than one year, but that the season must determine the date to some extent, for weaning should not be done just before or during the hot months. As to the mode of weaning, Guidi[9] advocates what he considers to be sudden weaning at thirteen or fourteen months of age, but he begins to give, at the same feed with the breast-milk, farinaceous food with cow's milk, as early as the sixth month; and if the mother's milk is deficient in quantity, would give sterilized milk similarly at the same feed with the breast milk, in order that the ferments of the mother's milk may assist the digestion of the other food. When the infant has become thoroughly accustomed to this combined feed of breast-milk and other food, the breast-feeding is

suddenly abandoned. But Guidi thinks that this should not be earlier than thirteen months, provided the mother has milk enough to supply part of each meal in this way.

Artificial Feeding.—Cow's milk, the most natural substitute for human milk, has the great disadvantage that it so easily becomes contaminated with bacteria. In this country no standard of bacterial purity has been fixed, but in America various Milk Commissions have fixed standards which must be satisfied if the dairyman desires to have his milk certified as specially good milk. The Milwaukee Medical Society's Commission[10] placed the standard at 10,000 bacteria per cubic centimetre, and none of these bacteria must be of injurious character. For cream the standard is 15,000 bacteria. As a matter of fact the average count actually found in the samples taken was 336 per cubic centimetre for milk, and 354 per cubic centimetre for cream. Such wonderful effectiveness from the certifying of milk and cream makes it much to be desired that some such system should be adopted in this country.

Should milk be boiled ? This is a question which has been discussed much recently ; and probably the majority of medical men recommend it through fear of bacterial infection, without reference to its effect on the digestibility of milk. Cautley[11] states that coagulation of the curd-forming proteid in milk by the rennet of the stomach takes place less readily if the milk has been heated ; gastric digestion is, therefore, improved to the extent that the juice can mix more easily with the uncurdled milk ; but is impaired to the extent that the milk stays a less time in the stomach ; the heating, especially prolonged heating, of milk results in an exchange of gastric digestion for intestinal. Pasteurization, he says, destroys the harmless lactic acid bacillus and most pathogenic micro-organisms ; the pasteurized milk may not go sour, but may none the less undergo putrefactive change from undestroyed organisms or spores, and this change may not be capable of detection by taste or smell. Even sterilized milk may be unsafe, for the spores of some bacilli which cause diarrhœa may escape destruction. Evans and Cope[12] made observations showing that unheated milk exercises some inhibitory action for some hours upon the growth of some micro-organisms. This action is entirely stopped by heating the milk. It is known also that there are certain ferments present in milk which play some part in digestion ; these also are destroyed by heat. Gippius[13] however has shown by experiment that with careful pasteurization at 60° to 63° C. milk is practically unaltered as a food, while it is rendered safe so far as risk of infection is concerned There can be little doubt that if raw milk cannot be trusted, pasteurization is much to be preferred to sterilization. As another mode of counteracting the effect of bacterial contamination of milk, Silva[14] has tried the addition of cow's serum to milk, and finds that it modifies the intestinal bacteria in dyspeptic children, so that the stools approximate in character to those of breast-fed children.

Difficulty of Curd-Digestion.—This common difficulty is relieved

to some extent by the addition of alkalies. Cautley[15] states that alkalies prevent the formation of tough curds in the stomach; and that lime-water is the best alkali for this purpose. He considers its constipating effect a myth. Sodium bicarbonate is said to be less constipating, and, by setting free carbonic acid gas in the stomach, makes the curd more porous and spongy, and so more easily infiltrated by the gastric juice. Citrate of soda hinders the formation of curd by precipitating some of the lime salts in the milk, so that the milk passes more quickly through the pylorus, and so intestinal digestion takes the place of gastric. Citrate of soda should be used in the proportion of 1 grain to the ounce of milk. The present writer[16] has discussed the use of proprietary foods where there is difficulty in digesting the curd of fresh milk; dried milk preparations and condensed milk offer the proteid in a more easily digestible form than in fresh cow's milk, but these preparations almost always necessitate the giving either of excess of sugar, or of deficiency of fat. Peptonization of milk seems preferable in many cases; and still better is the use of sodium citrate with fresh milk. The addition of starch-containing infant-foods to the fresh milk, which is sometimes done with the idea of preventing formation of large curds, is both harmful and unnecessary; even barley-water, containing as it does 1 to 2 per cent of starch, is often harmful. The use of alkalies or peptonization is to be preferred.

Fat-Indigestion.—An extremely common fault in infant-feeding is deficiency of fat in the food; and the present writer (loc. cit.) has pointed out that even where fat is present in sufficient quantity its assimilation may be prevented by an associated excess of carbohydrate, so that fat-starvation and rickets result. This is particularly the case in many of the patent foods. But an infant may suffer, not from deficiency, but from excess of fat in the diet; and Holt[17] considers that disturbances of digestion resulting from an excess of fat are quite as serious, if not quite so obvious, as those from excess of proteid. He records five cases of infants with severe symptoms from too high a percentage of fat in their food, the proportion varying from 5 to 7 per cent. Convulsions, tetany, laryngismus stridulus, gastric catarrh, constipation, and habitual vomiting, were the results observed. In many cases this high proportion of cream has been used with the idea of relieving constipation, but Holt points out that constipation may be aggravated, instead of relieved, by excess of fat; the hard, dry, grey stools passed by some of these cases consist almost entirely of undigested fat.

Sugar-Indigestion.—Churchill[18] mentions as one type of indigestion in infancy the difficulty of digesting sugar. The symptoms of this are flatulence and colic, with painful eructations of gas, and passage of flatus per rectum. In such cases the proportion of sugar given must be reduced. Cautley (loc. cit.) seems to regard it as immaterial whether cane-sugar or milk-sugar is used, except that the sweetening power of cane-sugar is greater, and therefore less of it should be used. Walker[19] recommends the use of a 7 per cent solution of milk-sugar in diluting the

milk or cream, instead of using plain water, and adding the dry sugar. The 7 per cent solution is prepared by mixing one ounce of milk-sugar with fourteen ounces of water. Obviously, with any mixture of milk or cream, this solution can never give less than 4 per cent nor more than 7 per cent of sugar.

Buttermilk.—The value of this product of the dairy in infant-feeding has been insisted upon by many writers, but more on the Continent than in England. Méry and Guillemot[20] record the case of a marasmic infant who was unable to take milk, owing to diarrhœa and vomiting, but who speedily gained weight when buttermilk was tried. The effects of buttermilk, however, are by no means constant; in some cases it produces vomiting or abnormal stools, or may be refused altogether by the infant. It is prepared by allowing the milk to ferment for some hours, then churning it for half an hour, and then boiling for three-quarters of an hour with some flour. The degree of acidity varies, and it is probably where this acidity is very high that the buttermilk disagrees. Rensburg[21] records a series of cases fed with buttermilk where other methods of artificial feeding had not succeeded; the weight began to rise and the stools improved from the day that the buttermilk was first used.

REFERENCES.—[1]*Pract.* Oct. 1905, p. 489; [2]*Ibid*, p. 442; [3]*Virchow's Arch.* 1904, p. 185; [4]*Arch. Ped.* May, 1905, p. 356; [5]*Rev. di Clin. Ped.* 1904, p. 83; [6]*Ibid*, p. 681; [7]*Pediatr.* Aug. 1905; [8]*Ann. de Méd. et Chir. Inf.* Feb. 15, 1905; [9]*Rev. di Clin. Ped.* Oct. 1904, p. 721; [10]*Arch. Ped.* March, 1905, p. 220; [11]*Brit. Med. Jour.* May 27, 1905; [12]*Arch. Ped.* Aug. 1905, p. 621; [13]*Pediatr.* June, 1905; [14]*La Pediatr.* April, 1905, p. 250; [15]*Pract.* Oct. 1905, p. 456; [16]*Ibid*, p. 462; [17]*Arch. Ped.* Jan. 1905, p. 1; [18]*Jour. of Amer. Med. Assoc.* May 27, 1905; [19]*Pediatr.* Aug. 1905, p. 489; [20]*La Pediatr.* Dec. 1904; [21]*Jahrb. für Kinderh.* 1904.

INFLUENZA.

Robt. Hutchison, M.D.

There are four clinical types of this disease: (1) The respiratory type—in which the symptoms are mainly those of acute coryza and bronchitis, with a special tendency to pneumonia, chiefly of the catarrhal type. Pfeiffer's influenza bacillus is found in the nasal and bronchial excretions; (2) The cerebrospinal type, the symptoms being severe headache, pains in the back and limbs, with much prostration, and even delirium; there may be irregularity of the heart, tachycardia or bradycardia, and children are liable to acute meningitis with convulsions; (3) The gastro-intestinal type, the chief symptoms being nausea, vomiting, abdominal pain, with occasional jaundice and diarrhœa, with collapse; (4) The febrile type, where there may be no other special symptoms except the general feeling of malaise, frontal headache, and prostration, with temperature varying from 100° F. to 104° F.

The most important thing in the treatment of influenza is to guard against the severe complications which so often arise. With this in view the patient must be confined to bed until the temperature has been normal for two days at least, saline purges administered, and much hot lemonade given to drink. Supporting treatment is indicated,

and the patient should be fed upon milk and eggs. At night **Pulvis Ipecacuanhæ co.**, gr. x, may be given. For the headache and pains in the limbs **Antipyrine**, gr. iii, is useful. **Quinine** is one of the best drugs to prescribe, and may be given as follows: From 1 to 3 grains, dissolved in 10 to 20 grains of citric acid, should be added to a mixture containing a sufficiency of ammonium carbonate and potassium bicarbonate to rather more than neutralize the citric acid. This dose should be given every three or four hours. For the cerebrospinal type of the disease **Bromides**, with which may be combined **Chloral**, are most efficacious. To enable the patient to thin and expel the tenacious bronchial secretion, the following is suggested:—

R	Ammonii chloridi	gr. x	Tincturæ senegæ	℥ss
	Ammonii carbonatis	gr. v	Vini ipecacuanhæ	♏ v
	Sodii bicarbonatis	gr. v	Aquæ chloroformi	ad ℥j
		Ft. mist.		

To be given with a tablespoonful of hot water three times daily.

The patients must be isolated as far as possible, and old persons and those with phthisis especially guarded against infection. Handkerchiefs used during the coryza should be well boiled, and the tenacious bronchial secretion expectorated should be burned.[1]

Prof. Clifford Allbutt[2], opening a discussion at the Hunterian Society, stated that although contagion was now assumed as obvious, this was not the general opinion in 1890, and he gave examples from his own experience as a Commissioner in Lunacy, when he was able to observe the course of influenza in the lunatic asylums in England. Those persons who were in contact with the outer world—viz., the medical and domestic staff, and the persons visiting them or the patients—were attacked at the rate of about 50 per cent, but on the inmates themselves, who did not go out in the outer world, the incidence was relatively slight. In his opinion the disease was propagated in the sputum and the spray from the respiratory tract, and unless a patient had respiratory affections he was not infectious. He went on to point out that, like pulmonary tuberculosis, influenza might cause excavation of the lungs. Passing on to consider the various symptoms, he laid great stress upon the extreme suddenness with which influenza, as a rule, attacked its victims. This was often a useful point in the distinction between influenza and typhoid fever. As to treatment, the two points he wished to impress upon them were: (1) That the patient ought to do what nobody, as a rule, would do—that was, **Go to Bed** at once, and stop there until the acute phase was well passed; (2) During the long convalescence he would recommend what he might call a non-toxic diet—viz., milk, custards, and no meat.

W. Bulloch, discussing the bacteriology of the disease, said that the researches of bacteriologists culminated in 1892 with R. Pfeiffer's discovery of the hæmophilic microbe since known as the bacillus influenzæ; practically no new facts have been added to this. He had found that the bacillus only grew in the presence of hæmoglobin, and that it was difficult to preserve the cultures alive. The important

practical point in reference to Pfeiffer's bacillus was its parasitic character, which rendered its cultivation a matter of difficulty. It was very susceptible to drying—a fact which altogether negatived the supposition that influenza was carried to great distances by the air. The extreme temperatures at which the bacillus grew were 27° and 42° C. This showed that in temperate climates, at any rate, the microbe did not multiply outside the body of man. In almost all cases it was propagated directly from man to man. As Pfeiffer showed, it was found locally in the respiratory passages, and it was an extreme rarity to find it in the circulation. Whereas in the early "nineties" Pfeiffer's bacillus was frequently met with, it had in recent years become much rarer, although epidemics of catarrh—described as influenza—were still very prevalent. He believed that what was called influenza was not one disease, but probably a series of diseases caused by different microbe , among which a prominent place had to be given to the micrococcus catarrhalis and allied cocci. He then referred to the spread of these catarrhal diseases, and emphasized the importance of the researches of Flügge and his assistants on the dissemination of microbes in droplets in the form of spray discharged from the mouth and nose during coughing, sneezing, etc. Referring to the important question of immunity, he said experiments showed that the immunity, if it existed, was of low degree and of slight duration. In all probability however, some immunizing influences were at work, as in the course of time the microbe became attenuated. With a disease so eminently contagious, and considering the innumerable chances of infection and the general disposition of man to the disease, a satisfactory prophylaxis was almost impossible.

References.—[1]*Pract.* Jan. 1905 ; [2]*Lancet,* May 13, 1905.

INSANITY. *C. C. Easterbrook, M.A., M.D*

Great activity is at present observable in all departments of the wide field of psychiatry, and distinct progress is being made all along the line.

I.—Anatomical and Physiological.

In the realm of the anatomy and physiology of the cerebral cortex, the histological researches of A. W. Campbell, and the micrometric observations of J. S. Bolton, are distinctly advancing our knowledge of brain structure and function, and localizing with more precision the psychical areas and layers of the cortex. W. McDougall, too, has drawn attention to the hypothesis that the synapses of the higher cortical neurons [possibly the synapses of the pyramids in the anterior and posterior association or psychical areas—C. C. E.] are the immediate seat of the psychical processes, in which case we would have to regard the intervening somewhat fibrillar intercellular substance—a substance which seems to baffle the methods of the histologist—as the material basis of consciousness and mind in general.

II.—Psychological.

In the sphere of psychology, normal, morbid, and experimental, we note the work of W. H. B. Stoddart on consciousness, emotion, and hallucination ; and many other papers, as on sensation and motion, by F. C. Gessner ; and especially on hallucination by Tamburini, Tanzi, Roncoroni, Mondio, Lugaro, Sidis, Boris, W. A. White, A. Pick, W. v. Bechterew and others ; and finally the teachings on experimental psychology emanating from Kraepelin's laboratory at Heidelberg and now at Munich.

III.—Etiological.

In the extensive and debatable ground of etiology, specially the influence of heredity, there are many workers, notably the following. W. F. R. Weldon reviews the current theories, and ultimately pronounces in favour of Galtonism ; J. Beard writes on the morphological continuity of germ cells as the basis of heredity and variation ; W. Lloyd Andriezen emphasizes the three essential factors—the sperm, the germ, and their immediate environment, especially in utero after their union into the zygote and resulting pre-embryo,—and also in man the special pathogenic factor, which he illustrates by showing the appalling contributions in the progeny of alcoholic parents to the ranks of insanity, idiocy, imbecility, criminality, and prostitution, and to infantile mortality. We may also mention the papers of W. König, who approaches the problem of heredity from the clinical psychiatrical aspect ; of F. W. Mott and others in the discussion on the relationship of heredity to disease at the 1905 annual meeting of the British Medical Association at Leicester ; of Karl Pearson on the inheritance of insanity, and of E. Schuster on the data required by a statistician for the study of the inheritance of disease ; of A. R. Urquhart and others in the discussion on the heredity of insanity in the section of psychological medicine at the Leicester meeting ; and of Galippe[1] on the inheritance of the stigmata of degeneration. Again J. Macpherson has emphasized the importance of heredity as the main etiological factor of insanity in the Morison Lectures of 1904 and 1905, in which he considered the question of variation in its relation to the origin of insanity, and the allied neuroses of hysteria, epilepsy, and alcoholism, and dealt with the general subject of the etiology and distribution of insanity. Finally, as a contribution to the etiology of insanity from the opposite aspect, we may note Theo. Hyslop's paper on the influence of occupation and environment.

IV.—Pathological.

In the department of pathology much good work is being done. We may specially refer to the following varieties and forms of insanity in which investigations are being made, with a view to their being established on a proper pathological basis or otherwise.

1. *Amentia and Dementia.*—J. S. Bolton, by his macroscopic and micrometric studies of the brain cortex in health and in the insanities,

has not only confirmed the already well-known fact that dementia means death of nerve cells and atrophy of the frontal lobes anteriorly, but he has gone further and studied the areas of cortical wasting more minutely, and has demonstrated the details of the narrowing of the layers of the cortex, especially the pyramidal layer, a wasting or narrowing of the cortex which he finds to be directly proportional to the degree of dementia. By correlating his post-mortem and micrometric findings with his clinical observations, he has come to recognize two great groups amongst the insanities :—

(*a*) *Amentia*, or the mental condition of patients suffering from deficient neuronic development, and exhibiting varying degrees and types of cerebral degeneracy. Amentia includes low-grade aments, or idiots and imbeciles, and high-grade aments, who include excited and moral cases exhibiting general mental or moral instability or perversion or eccentricity, recurrent cases, hysteria, true epileptic insanity, and systematized delusional insanity. In amentia there is under-development of the cerebrum, associated with an absence of morbid intra-cranial appearances. Aments seldom exhibit dementia except as the result of the involution of decadence and senility, or of a direct toxæmic degeneration of the neurons.

(*b*) *Dementia*, or the mental condition of patients suffering from deficient neuronic durability, with resulting neuronic degeneration, and exhibiting varying degrees and types of cerebral dissolution. Bolton states that the large group of dementia includes : (i) Insanity without dementia : there are no intra-cranial morbid changes, and the pia-arachnoid strips naturally ; (ii) Insanity with appreciable dementia : intra-cranial changes slight, pia-arachnoid strips rather more readily than usual ; (iii) Insanity with moderate dementia : intra-cranial appearances moderate, with sub-dural excess to the level of the tentorium, and pia-arachnoid strips readily ; (iv) Severe dementia with symptoms of insanity : morbid intra-cranial changes marked, and pia-arachnoid strips very readily ; (v) Gross dementia : morbid appearances very marked, and pia-arachnoid strips like a glove from the cortex. In dementia the morbid intra-cranial changes, and narrowing of the cortex itself, vary directly with the degree of dementia.

It will be admitted that Bolton's classification largely accords with the facts, but not entirely ; and hence it has led him into some degree of self-contradiction, as where he, after fundamentally distinguishing between amentia and dementia, admits that an ament may become demented ; and again, where he includes under dementia his first sub-group of "insanity without dementia." While much admiring Bolton's work, we think it unfortunate that he should have used the terms amentia and dementia, which already have distinct recognized limited meanings, in the wide sense as above described. If Bolton's nomenclature is adopted to any extent, in a short time the terms amentia and dementia will be as obscurated in meaning as paranoia, dementia praecox, and others that have gone through similar phases in the past history of psychiatry.

2. *General Paralysis.*—As is well known, the *parasyphilitic hypothesis* of general paralysis, as upheld chiefly by F. W. Mott and others in this country, is that which finds most favour amongst psychiatrists, and certainly the evidence in favour of the importance of a past syphilis as the essential etiological factor is very strong. Gowers found hat in cases of undoubted syphilitic skin rashes it was possible to obtain a history of primary chancre in only 80 per cent of the cases, and this is exactly the proportion of syphilitic histories he obtained in his private cases of tabes. Similarly in 80 per cent of cases of general paralysis a syphilitic history is obtainable. Again, about 46 per cent of patients with tertiary syphilis already exhibit signs of tabes or paralysis or tabo-paralysis; and in 64 per cent of these a neurotic family history is obtainable, showing that the neuropathic factor, as well as the syphilis, has distinctly to be reckoned with in the pathogenesis of general paralysis. Again, in juvenile tabes or paralysis, the signs of hereditary syphilis are very frequently present. It is usually held that the toxin of syphilis acts by lessening the vital endurance of the nerve elements, which succumb to some "stress"; but this explanation is not entirely satisfactory, because the so-called parasyphilitic diseases may, in the absence of any special stress, come on rapidly and have a rapid course, or again may become stationary and improve to a remarkable extent. Hence even those who hold the parasyphilitic hypothesis acknowledge that there must be some other factor which possibly co-operates with the syphilitic influence.

The *diphtheroid bacillary infection hypothesis* of W. Ford Robertson, G. Douglas McRae, and John Jeffrey, who were the joint authors of the first paper on this subject[2], is attracting considerable attention at present. These workers do not deny the influence of the syphilitic factor, but maintain that it acts—like alcoholism, plumbism, excessive meat diet, or any of the other commonly recognized "causes" of general paralysis—merely by effecting a general and local impairment of the defences of the organism against bacteria: that is, by lowering the natural immunity to bacteria, in consequence of which the latter flourish and infect the system. At first the alimentary tract was demonstrated to be the source of infection; later the respiratory tract was also found to be a site of attack; and lastly and most significant of all, Ford Robertson and Douglas McRae have discovered the genito-urinary tract to be perhaps the most striking seat of infection in the disease.

As to the nature of the bacillus itself, the authors describe it as "a diphtheroid bacillus," that is, "a bacillus which has the general cultural features and the staining reactions to Neisser's method which characterize the Klebs-Löffler bacillus,"[3] and it is this diphtheroid bacillus which they maintain gives to general paralysis its special paralytic characters. The organism has been found to be innocuous to guinea-pigs (in this way differing from the bacillus diphtheriæ), but it has been found by Theodore Shennan to be fatal to rats, and by Lewis C. Bruce to be fatal to a goat, in both cases the animals dying

with nervous symptoms resembling general paralysis. Hence according to the diphtheroid infection hypothesis, general paralysis may be defined as the result of a chronic toxic infection from the genito-urinary, respiratory, and alimentary tracts, permitted by general and local impairment of the defences against bacteria (owing to the influence of syphilis, alcoholism, or other commonly recognized cause of general paralysis), and dependent especially upon abundant growth of a diphtheroid bacillus (bacillus of general paralysis) which gives the disease its special paralytic character; and is usually progressive, and in course of time fatal, though in view of its nature it is hoped —and not without strong grounds for this hope, if the observations of the above-mentioned workers be confirmed—that an anti-toxin or rather an anti-serum of curative value will be discovered.

The same bacillus has been found abundantly by Ford Robertson and Douglas McRae in the bladder during life of four tabetic general paralytics, that is, in four patients with tabes showing paretic symptoms. The significance of this discovery is obvious. It means that all that has been said of the diphtheroid bacillary infection hypothesis of paresis, also applies to tabes, and in this connection David Orr and R. G. Rows have made the interesting observation that in tabes and in tabetic general paralytics, the initial lesions of the spinal cord begin at the spot (Obersteiner's ring) where the posterior root fibres enter the cord and lose their neurilemma sheath, and so are exposed to some noxious agent circulating in the lymph stream, which produces their degeneration. Possibly the infection from the genito-urinary tract leads to the attack, per the lymphatics, of the posterior spinal roots in tabes. If the diphtheroid bacillary infection hypothesis be confirmed, general paralysis and tabes must be regarded as an infection which is not necessarily syphilitic, though often associated with syphilis, but is probably venereal, and consequently infectious—and it may be mentioned that many instances of conjugal tabes or paresis are now on record. Hence tabo-paralysis may come to be regarded as the *fourth* venereal disease.

The only serious criticism of the above work so far has been by J. W. H. Eyre and J. Froude Flashman [4], whose investigations lead them to the conclusion that "they are unable to trace any causal connection between bacillus diphtheriæ and general paralysis of the insane." This of course the Ford Robertson school do not maintain, as will be gathered from what has been said. Eyre and Flashman's work, though very careful and elaborate, does not seriously assail the position of Ford Robertson and his co-workers, for three main reasons: (*a*) Their observations on *living* general paralytics and other insane patients are confined to the throat, in which the Ford Robertson school, as they distinctly state, found the least evidence of the diphtheroid bacillus, often failing to find the organism in films or to obtain cultures, probably owing to the great abundance and variety of other organisms at this site; (*b*) Their observations on *post-mortem* material in the case of general paralytics embraced only ten cases; notwithstanding,

in four of these (40 per cent) a diphtheroid organism was found in the respiratory tract (pharynx and bronchi) and in one of these four cases the organism was also found in the colon and in the heart blood, indicating a general infection. The genito-urinary tract was not examined; (*c*) Their experimental investigations were confined to guinea-pigs, showing that the organism was innocuous to them, and thus differentiating it from the bacillus diphtheriæ, but they should have embraced rats or goats.

It remains to be said that the Ford Robertson school are working vigorously at the question of the serum diagnosis and serum treatment of general paralysis and tabes. They have obtained some success in getting agglutination of the diphtheroid bacillus of general paralysis and tabes by general paralytic blood serum, thus confirming the view that the bacillus has a pathogenic influence in the disease.

3. *Insanities associated with Senility, Arteriosclerosis, and Multiple Sclerosis.*—These varieties of insanity are coming to be more clearly differentiated clinically and pathologically.

In *senile insanity* there are clinically the characteristic changes of old age exaggerated, giving rise to the picture of senile dementia; and pathologically a characteristic senile brain atrophy, the changes being most marked in the outer layers of the cerebral cortex, and consisting of special degenerative changes in the neurons, and of characteristic proliferative changes in the neuroglia.

In the insanity associated with *arteriosclerosis*, there are clinically symptoms similar to those in senile dementia with distinguishing focal vascular lesions (*e.g.*, local palsies and symptoms of aphasic nature), and the signs of arteriosclerosis in the arteries, heart, kidneys, etc.; and pathologically evidence of general arteriosclerosis in the internal organs and brain (especially basal arteries), and cerebral cysts and areas of softening. Alzheimer also describes under this condition an arteriosclerotic brain atrophy consisting of cerebral atrophy as in senility, with peri-vascular gliosis, and Binswanger describes a chronic diffuse subcortical encephalitis.

In the insanity associated with *multiple sclerosis*, in which mental symptoms are usually slight, especially in the spinal forms of the disease, there are clinically distinct euphoria and mental facility with slowness of thinking, and failure of memory and of association of ideas; and pathologically the characteristic lesions of multiple cerebrospinal sclerosis.

4. *Autotoxic Psychoses.*—A. A. D. Townsend[5] finds in many cases of melancholia and morbid depression evidence of gastro-intestinal disorder, as has frequently been observed before, the common symptoms being foul breath, coated tongue, indifference to or refusal of food, marked constipation, foul stools, anæmia, sallow dirty skin, with offensive perspiration and irritations leading to flesh picking, and headache. He however specially draws attention to the presence of indoxyl in the urine in these cases, the amount of which varies directly with the degree of the above-mentioned symptoms, and with

the depth of the mental depression; and while the indoxyluria indicates intestinal putrefactions, he is unable to say that intestinal toxins are the cause of the depression; but he points out that the melancholia does not clear up until the indoxyl in the urine disappears, and on the whole he is inclined to regard these cases of morbid depression as toxæmic in nature. The writer has observed many cases in which the predominant mental symptoms of morbid depression, confusion, and especially passivity and resistiveness were accompanied by marked constipation or a peculiar form of foul diarrhœa, These cases often end fatally, and show distinct evidence of atrophic catarrh of the gastro-intestine and morbid liver changes.

D. M. Cowie and F. A. Inch[6] find in states of mental depression that in 81·8 per cent of cases, gastric hyperacidity is present, of the nature of a true hyperchlorhydria (though there is also hypertotal acidity), which is due to the psychosis, because the gastric glands and mucosa generally are found to be degenerated.

5. *Dementia Præcox and Catatonia.*—It is gradually being recognized that the term dementia præcox is an unfortunate one, and Kraepelin[7] himself, who is responsible for its present wide use, would now welcome a more appropriate name. The term dementia, unless restricted to its ordinary and proper meaning of permanent acquired mental enfeeblement, is too generic in character to be of any use clinically in psychiatry. Kraepelin's use of the term is consequently confusing, because he himself admits that in nearly 20 per cent of cases dementia never sets in, and that in other cases the patients may have long remissions of good health. Again, dementia præcox, or precocious or premature dementia, is a diagnosis which is apt to be made in all psychic disorders of the young, in which cases consequently the age of the patient comes to be the determining factor of the diagnosis. And lastly, to make the confusion worse, Kraepelin has himself, as is well known, pointed out that catatonic and paranoid forms of dementia præcox may come on late in life.

There have been attempts to establish dementia præcox on a pathological basis, and to describe it as a sub-acute or chronic degenerative psychosis of autotoxic origin (e.g., intestinal, reproductive, etc.), but the histological and post-mortem findings are very various, and in all probability dementia præcox simply represents a somewhat diffuse symptomatic group of cases in which there is apparent tendency to premature dementia, but in which the dementia may not occur, and for which consequently the term chronic mental confusion would be more appropriate.

Catatonia is another condition chiefly of symptomatic significance, whose pathology has not yet been established. Nissl, however, has found, especially in the deeper layers of the cortex, a peculiar form of neuroglial overgrowth, and Alzheimer describes neuronophagia, or devouring of neurons by proliferating "satellite" cells, as a characteristic feature.

6. *Paranoia.*—R. Percy Smith[8] says that paranoia is a useful term

if restricted to chronic delusional insanity in which the delusions are organized and systematized, and he issues the timely warning that though paranoia is characteristically an intellectual disorder, it is not primarily so in all cases, and may be sequential to disorder of emotion.

7. *Epilepsy and Insanity.*—A. F. Tredgold[9] points out that all aments (that is, idiots, imbeciles, and defectives) with epilepsy are not epileptic aments in the sense that the epilepsy was responsible for the amentia. They include three main groups: (1) Primary amentia with epilepsy as a complication; this complication is very common (36 per cent) in primary amentia, and the more so the deeper the degree of amentia, e.g., 56 per cent of idiots and 42 per cent of imbeciles, and 11 per cent of feeble-minded patients become epileptic; (2) Primary epilepsy producing amentia, that is, epileptic idiocy, etc., proper; (3) Gross cerebral disease producing amentia and epilepsy.

The pathology of epilepsy is still obscure. Cortical sclerosis with destruction of the pyramid cells, sclerosis of the cornu ammonis, and of the cerebrum generally have been described, and have been attributed to some auto-intoxication, possibly gastro-intestinal. W. Aldren Turner[10] reports the histological findings by J. Turner in certain of his own cases as follows: Very marked chromatolytic degeneration in the sensory cells of the second cortical layer, and neuroglial overgrowth, especially in the outer cortical layers: also thrombosis of cortical arterioles, capillaries, or venules, leading to stasis of the circulation and therefore deprivation of blood in the cortical motor areas.

V.—Clinical, Symptomatological, and Diagnostic.

The so-called symptomatological diagnosis of mental affections has in the writer's opinion greatly militated in the past against a proper understanding of the insanities and their mutual relationships, and in two ways, namely, through failure to recognize in the first place that states of morbid depression, morbid excitement, etc., cover more symptomatic ground than typical melancholia, mania, stupor, etc. The latter are probably true diseases or parts of one disease, whereas the symptomatic mental states of depression, exaltation, excitement, and confusion may often fall short of true melancholia, mania, etc., and be merely clinical phases of other varieties of insanity, e.g., general paralysis, alcoholic insanity, etc. In the second place the fact of a combination of psychoses in one individual is by no means as well recognized clinically as it ought to be; and where such occurs the proper diagnosis should include reference to the two varieties of insanity present, e.g., congenital imbecility with mania at adolescence, paranoia with stupor, hypochondria with melancholia. It would probably help to clear the ground if the terms melancholia, mania, and stupor were restricted to the true varieties of disease included under these names, and if the terms morbid depression, morbid excitement, etc., were accorded merely a symptomatic value.

Prodromata of the Psychoses.—T. S. Clouston[11] draws the attention

of the practitioner, neurologist, and psychiatrist to the importance of insufficiently recognized warnings of oncoming attacks of insanity in the form of various nervous, mental, and other symptoms which may be grouped as follows: (1) Sensory, e.g., discomfort or pain in the head, spine, or viscera, various other uncomfortable feelings in the head, also hypersensitiveness to light, noise, and other special sensory symptoms; (2) Motor, e.g., alterations in the expression of the eye and facial muscles, fidgets, and various muscular twitchings; (3) Nutritive, etc., e.g., feelings of heat and cold, flushing, giddiness, flabbiness, and loss in weight; (4) Sleep, e.g., insomnia, or shallow, broken sleep, dreams, nightmares and night terrors; (5) Speech and handwriting, e.g., minor alterations and peculiarities; (6) Mental, e.g., feelings of nervousness, anxiety, irritability, want or excess of emotional feeling, want of energy, feelings of antipathy, suspiciousness, etc.; and (7) Various errors of circulation, digestion, menstruation, etc.

Degeneration.—G. L. Walton[12] points out that the terms degeneration and degenerate are used in much too wide and loose a sense to be of scientific value when they are made to include all downward departures or variations from the average normal, physically, mentally, and morally, however insignificant these variations may be: for such usage implies that any individual showing any such variation, however insignificant, is a degenerate, and so causes a fact to be recorded in such a way as to involve an opinion. We know that marked mental or moral variation is often correlated with downward physical variation or "stigma," also that slight mental and moral variations may be accompanied by no "stigma," and also that slight "stigma" may often be unaccompanied by any mental or moral downward variations. Hence Walton suggests that the terms degeneration and degenerate should be restricted in meaning to stigmata, to individuals, to families or to races showing unquestioned tendency to reduction to a lower type, and so should apply only to marked downward variations in physique, mind and morals. He also suggests that more appropriate but less sinister terms to cover all such departures from the typical, would be deviation and deviate. In the writer's opinion the terms deviation and deviate would be more useful still if restricted in meaning to the minor downward variations, and just as we differentiate those mentally deficient into idiots, imbeciles, and defectives, so also would we be able to distinguish the downward variants into degenerates and deviates.

Ganser's Symptom.—Ganser's symptom in the proper or narrow sense is the symptom of "crooked answers," that is, the giving to a simple question a false answer though a related one. It is not merely the symptom of irrelevant answers in general. It has to be kept in mind in forensic work, because it is most commonly met with in criminals exhibiting or feigning psychosis, and amongst psychoses it is chiefly met with in hysteria, dementia præcox, and catatonia, epileptic insanity, hypochondria and circular insanity.

Feigned Insanity diagnosed by the use of Ether.—C. G. Wagner[13] reports the interesting case of a man who feigned insanity for two years in order to escape execution for the murder of his wife, but who finally was found out to be malingering, by a special commission which was appointed to ascertain his mental condition, and which as a *dernier ressort* employed ether anæsthesia. Ether was given three times, and, on the third occasion, only when complete unconsciousness and complete relaxation were attained, was the fraud detected. The man then freely confessed and was finally executed.

Lumbar Puncture.—The examination of the cerebro-spinal fluid as an aid to diagnosis is becoming more common in neurological and psychiatrical work. Information is obtainable from its physical, chemical, and microscopical, including bacteriological, characters.

1. Physical. Normally it is a clear, colourless liquid, but in disease it may be opalescent or turbid, and may vary in colour from s raw or yellow or greenish to amber or reddish. The pressure is sufficiently indicated by its rate of flow through the needle and tube employed for making the puncture, and is increased in uræmia and during the initial stage of epileptic fits. The specific gravity and osmotic tension are meantime only of scientific interest; the coagulability is increased in meningitis.

2. Chemical. The cerebro-spinal fluid is a secretion of the ependyma of the brain, especially that covering the choroid plexuses; it is normally alkaline, and consists of water, some chlorides, a small amount of serum globulin, and traces of serum albumin, cholin and sugar. Its toxicity in animals is feeble. When boiled it becomes opalescent from its containing globulin, which can be removed by previous precipitation with ammonium sulphate (which does not precipitate the albumin).

Albumin is present in excess in general paralysis and tabes, also in meningitis, apoplexy, secondary syphilis and syphilitic hemiplegia, facial erysipelas, and in epilepsy, catatonia and dementia of senility, and arteriosclerosis. The presence of albumin is often associated with lymphocytosis, but the two conditions are independent, and the former on the whole is the more frequent.

Fibrin is present in acute meningitis and in tubercular meningitis.

Cholin is increased in any condition of degeneration of the nervous parenchyma, and therefore chiefly in general paralysis, but also in tabes, multiple sclerosis, epilepsy, brain tumour, apoplexy, encephalitis, meningo-encephalitis, and beri-beri.

Sugar is in excess in diabetes mellitus, also in lipæmia—in which fat also is present in the cerebro-spinal fluid.

3. Microscopical. Normally the fluid contains no white cells except at the most one, two or three lymphocytes in one immersion field. Lymphocytosis (slight, four to six; moderate, seven to twenty; or intense, above twenty lymphocytes in one immersion field), and polymorphonuclear leucocytosis may occur in disease. A differential count is possible only in fresh diluted fluid without centrifugation,

which according to C. B. Farrar, distorts the cells and alters their staining capacity.

Lymphocytosis means a chronic or sub-acute cerebro-spinal pia-arachnitis and peri-arteritis, and is seen especially in general paralysis, tabes, syphilitic meningitis or myelitis, also in tubercular meningitis. It has, however, also been met with in alcoholism, epilepsy, sciatica, herpes zoster, and epidemic parotitis. It is said to be present in all cases of Argyll Robertson pupil, and to be one of the earliest signs in general paresis and tabes. Polymorphonuclear leucocytosis means an acute congestion or inflammation of the meninges, epidemic cerebrospinal meningitis, or cerebral abscess.

Phagocytosis (granule or reticulated cells) is present in cases of focal hæmorrhage, softening, and necrosis.

Parasites.—The cysticercus cellulosæ may occur in the fluid, in the disease associated with that name, and the trypanasome has been found in cases of sleeping sickness. Bacteria are not of much value for purposes of diagnosis, because of the delay entailed by culturing them or by injecting the fluid into animals, but diplococci, meningococcus, pneumococcus, streptococci and staphylococci, and bacillus tuberculosis have all been found.

VI.—Prognostic.

R. Jones[14] states that insanity, in whatever form it affects the individual, shortens life, the average mortality rate of the insane population of Great Britain, Europe, and America being six to seven times that of the sane general population. Out of every ten patients who become insane, three recover and remain sane for the rest of their lives, while seven die insane sooner or later, and are specially prone to tuberculosis. The prognosis of insanity in young children is very bad, especially if epilepsy or syphilis are factors. In adolescent insanity more girls recover than boys. Neologisms and verbigeration are habits of bad prognosis.

VII.—Medico-Legal.

Several interesting contributions in this department of psychiatry have appeared, notably a series of articles on "The Relations of the Insanities to Criminal Responsibility and Civil Capacity," by Sir John Batty Tuke and C. R. Howden[15], representing the conjoint views of the physician and lawyer, and a volume on "Criminal Responsibility" by Dr. Mercier, representing his well-known opinions on the subject from the point of view of the alienist.

A. Douglas Cowburn[16], in a discussion before the Medico-Legal Society, says that it is often impossible to apply the knowledge test of right and wrong, as required by the answers of the Judges in 1843, but the laxity of medical definitions and hypotheses leads lawyers to be firm in their rules. The expert psychiatrist should decide the diagnosis, but the law must apportion its standard of responsibility to each case. Criminals may be classified into five relative groups: (1) Professional criminal; (2) Habitual criminal, with a bad police

record; (3) Occasional Criminal, the victim of temptation; (4) Insane criminal, who should be exempt from punishment; and (5) Weak-minded criminal, who should receive medical treatment rather than punishment. These distinctions are recognized in the convict cell, but not in the courts.

VIII.—Statistical

It is well known that the numbers of registered insane are steadily increasing year by year in different countries. It is generally supposed that this increase is due to an accumulation of chronic unrecovered insane, and not to an actual increase in the rate of production of fresh insanity in the community. C. C. Easterbrook[17] states that in order to settle this important question satisfactorily, it is necessary to employ a medico-statistical scheme which will satisfy the statistician, physician, and lawyer, and which for comparative purposes will lend itself to adoption in any civilized country. The essence of this scheme is in the first place to make it apply only to the "insane" (that is those who are certified "insane," to the exclusion of voluntary boarders, and borderland cases, who in the eyes of the law are "sane persons") and secondly, to divide the "insane" who are so certified for purposes of care and treatment, into two distinct groups—direct and indirect.

Direct admissions are defined as "persons admitted on account of the onset of a distinct attack of insanity, for which certification has become necessary for the first time during the existing attack," and they comprise first attack cases, not first attack cases and cases in which it is unknown whether the attack is the first or not. Direct discharges are the recoveries, that is, persons who return to the community as sane agents entirely released from their certificates of insanity.

Indirect admissions are defined as "persons admitted on account of an attack of insanity for which there has already been certification during the existing attack, previous to the present certification, sanction or order for the admission," and they comprise unrecovered insane patients hailing from the community ("home-cares"), or from other institutions in the same ("transfers"), or in a different ("transferences") country. Indirect discharges are the unrecovered insane who go to the community as "home-cares," or to other institutions as "transfers" or "transferences," and who are still unreleased from their original certificates of insanity, although they may be improved (relieved), as well as unimproved (not relieved). In any given year in the annual statistics of asylums or similar institutions it is necessary to reduce cases admitted and cases discharged to terms of persons admitted and persons discharged, by eliminating the "re-admissions" and "pre-discharges" of the year in question.

It is obvious from the above definition that the direct admissions, and especially the first attack cases, form the only reliable index of the new insanity arising in a country, and afford a basis of study for ascertaining its characters or types, and the factors at work in its production.

IX.—Therapeutical

A.—Preventive.

1. *National Eugenics.*—Dr. Francis Galton[18] states, in a paper read before the Sociological Society, a provisional list of the pressing problems for eugenic enquiry, and all who are interested in the important mat er of the national physique and mental well-being, should study Dr. Galton's comprehensive scheme very carefully, for its success will largely depend on the co-operation of those who are willing to enter the anks of eugenic workers. When national eugenics become practical politics, the problem of the prevention of insanity will have been largely solved.

2. *The Sterilization of degenerates* by a process of surgical asexualisation, is advocated by R. R. Rentoul as an effective means of checking the increase of insanity, degeneracy, crime and the like; and his bold views have given rise to considerable discussion. In the writer's opinion, while it is obvious that the method proposed would prevent the "degenerate" from propagating his kind, the "degenerate" would still be at large and capable of propagating his baneful moral influence in society; and consequently the more effective, and at the same time more humane method, would be to segregate the degenerates from society in colonies where they could propagate neither their kind nor their influence, the isolation being permanent in the case of the irreclaimable, who would thus in course of time die out. This method has already been in operation for years in the case of the chronic insane, but requires to be carried out more rigorously for them, and in addition to be extended to the case of their cousins and congeners who breed insanity, namely, drunkards, sluggards, criminals, and the socially unfit in general.

3. *Treatment of Incipient Insanity*, in mental wards of general hospitals.—Sir John Batty Tuke, in his presidential address before the Neurological Society[19], deals with this subject from the medical, political, and economic aspects, and instances the good work already done in this direction by the City of Glasgow. This is a subject on which the most competent psychiatrists are in full accord. The marked prophylactic and curative effects of such treatment in individuals "on the borderland," and the vast economic importance to the state of such a scheme when applied to the case of the poor, are duly emphasized. "A stitch in time saves nine" is the keynote of the theme, and the time will undoubtedly come when every general hospital in our larger cities and towns will not be regarded as fully equipped, or as properly fulfilling its duty to the community, unless it opens its doors to all who suffer from the "highest" as well as the lower diseases of the nervous system.

4. *Care of the Insane Poor.*—A special commissioner of the *British Medical Journal*[20] deal with the subject of the family care of the insane poor as practised in Belgium, Scotland, France, Holland, and Germany. He shows its indubitable success in these countries, and

strongly urges its adoption in England and Wales. The advantages of the system are :—

i. That the patients themselves, who are mainly of the harmless demented, and delusional types, and mostly incurable and chronic, are considerably benefited, becoming healthier, happier and more tranquil than in the asylum, some of them even recovering.

ii. That the patients in asylums are indirectly benefited by the abstraction of the harmless ones for family care, as the asylum officials are thereby enabled to devote all their energies to the curable cases.

iii. That the system implies increased co-ordination and control by medical and lunacy authorities, as compared with the present condition of affairs obtaining in England and Wales with its five thousand and more boarded-out pauper lunatics, who are completely excluded from the general lunacy administration of the country and subject to all the abuses of the olden days.

iv. That the system benefits the ratepayers, for (*a*) It saves the corresponding building and extension of asylums ; (*b*) It is a cheaper form of maintenance for the patients concerned, costing from a quarter to a half less per patient than in asylums ; and (*c*) It gives some return in the form of money and labour to the guardians concerned. Everyone interested in the insane and lunacy administration in England and Wales should carefully digest this useful series of articles.

Allied to the subject of the family care of the insane poor are those of (1) *The after-care of the insane poor* discharged recovered from asylums, which is the laudable object of the After-care Association (Offices : Church House, Dean's Yard, Westminster, London, S.W.) ; and (2) *The care and control of the feeble-minded*, which is at present engaging the attention of a Royal Commission. It is obvious that these matters have a very distinct bearing on the prevention and prophylaxis of insanity.

B.—Curative.

1. *The female nursing of insane men* is already adopted in most Scotch asylums, and very extensively at Stirling District Asylum by Dr. G. M. Robertson who in a further paper on the subject, read before the Medico-psychological Association at the annual meeting in July, 1905, strongly advocates its more general adoption in England. Even the most strenuous advocates of this progressive departure in the practical treatment of insanity acknowledge that the system has its limits and difficulties. There are many insane men who require nursing, who can be most beneficially nursed by women : for example most of the old, infirm, and helpless patients, and recent and sick patients who are quiet and harmless. There are on the contrary many insane men who require careful nursing, who cannot be suitably or safely nursed by women, owing to the intensity of their mental symptoms : for example, severe excitement, homicidal or suicidal tendencies, vivid hallucinatory and delusional conditions, etc., these being relatively common amongst recent cases.

It has been found by experience that mixed nursing in the same ward by men and women is not a success. There are various duties which either will readily do by themselves, but not with the other looking on. In the writer's opinion, therefore, both male nursing and female nursing of men are necessary, but must be carried on in separate wards of hospital character. There are, however, certain duties in connection with the nursing of insane men which can be only carried out with propriety by male nurses, e.g., bathing, attendance at w.c., etc. ; and consequently for the successful carrying out of the system of "female nursing of insane men," it is necessary that the structural arrangements of the infirmary and hospital department for the male patients be such that male attendants will be always readily available for bathroom and closet duties in the ward staffed by nurses, and that an elastic arrangement obtain by which the patients can be freely interchanged between the two wards according as their symptoms indicate that they will be more suitably nursed by men or by women. This is the arrangement which is to be instituted at the new hospital at Ayr Asylum, which will be opened shortly. It is of course hardly necessary to add that the system benefits also the ratepayer.

2. *Hydrotherapy.*—G. T. Tuttle[21] records his observations of the effects of **Hot and Cold Baths** in the insane, on the body temperature, weight, sleep, respiration, circulation, blood pressure, blood cells, tissue metabolism, and mental condition ; and as the result of his experience advocates the more general adoption of hydrotherapy in mental hospitals.

3. *Electrotherapy* is becoming more adopted in asylum practice, but physicians have not to any extent recorded their experience with this form of treatment among the insane. **Galvanic Currents** passed through water at 100° F. in a bath in which the patient is immersed, for ten to thirty minutes at a time daily, or less frequently, for periods of a week, have been found beneficial in cases of melancholia and stupor, but it is not stated how much of the benefit is attributable to the water or to the electricity, in these cases. **High Frequency Currents** (250 to 750 milliampères are necessary in different cases) have been found beneficial in cases of persistent insomnia or neuralgia.

4. *Surgical Treatment.*—Da Costa[22] thoroughly disapproves of trephining in microcephalic idiocy, ordinary epilepsy, hypochondria, hallucinatory or delusional insanity, or traumatic insanity without some localizing symptoms ; and of operations on the viscera simply because of visceral delusions, unless the latter are very severe. **Trephining** is justifiable in traumatic idiocy and insanity with localizing symptoms, in hydrocephalic idiocy or imbecility (only internal drainage is here permissible), in epileptic insanity with evidence of local trauma or focal symptoms, in status epilepticus, and finally in general paralysis with evidence of increased intracranial pressure, but in this case the operation is merely palliative.

Lumbar Puncture has been tried as a therapeutic measure in very various diseases with very varying results, but is now practically

employed only for relieving pressure symptoms in meningitis, and in fractures of the skull. As a means of introducing drugs, for example cocaine, for inducing surgical anæsthesia (cocaine is be t administered dissolved in the patient's own cerebrospinal fluid), lumbar puncture promises to become more important. Its therapeutic uses in insanity are as yet unestablished.

5. *Medical Treatment.—Hypnotics and Sedatives.*—This subject has been fully discussed at the Medico-Psychological Association meeting at London, in May, 1905, by W. Maule Smith and others[23], and by the British Medical Association at Leicester in July, 1905, by Sir Lauder Brunton and others[24], and in a thesis by S. J. Cullum[25], to which papers the reader is referred. It will suffice here to say that it is the physician's duty in the first place, to put the patient in the most favourable hygienic conditions for recovery; secondly, to correct so far as possible any morbid condition of the circulation, digestion, and other non-nervous functions which seem to have a bearing on the insomnia or excitement present; thirdly, to try the effect of rest in bed or of exercise, in the fresh air or in the ward, with isolation of the patient if necessary for extra quietness; and fourthly, and only as a *dernier ressort*, to prescribe hypnotics or sedatives in order to induce the parenchyma of the psychical cortex to rest and if possible to sleep. The following hypnotics and sedatives are those in greatest favour at present:—

Hypnotics. Paraldehyde, chloral, amylene hydrate, trional, isopral, dormiol, hypnone, chloralamide, urethane, and hedonal.

Motor sedatives. Hyoscine (hypodermically) and conium (succus).

General psychic and reflex sedatives. Bromides, sulphonal, neuronal, veronal, opium, morphine (hypodermically), hyoscyamus, and cannabis indica.

Anti-serums.—L C. Bruce[26] having frequently observed in the blood of those acutely insane a state of hyperleucocytosis, and in many cases bacterial agglutinins which do not occur in the blood of healthy people, and having in consequence concluded that in many cases acute insanity is of the nature of a bacterial infection, has employed the antiserums of streptococcus, staphylococcus, and bacillus coli in acute insanity. Hypodermic administration proved valueless. Given by the mouth, the three serums produced no benefit in cases of fully developed and established recent insanity, nor in cases of catatonia, but they aborted the attacks in two cases of threatened relapse during convalescence from mania, and in two cases of threatened recurrent attacks. The anti-serums in about half the cases also had a hypnotic action.

Drug Treatment of Inebriety.—In addition to enjoining absolute teetotalism and a simple, light diet, with correction of any concomitant disorder of digestion, etc., the specific treatment most in favour at present consists of hypodermic injections of **Strychnine** and **Atropine**, given after the delirium tremens stage is past and for five-day periods at intervals of five days, and combined with a **Bitter Tonic** given by

the mouth, the favourite being liquid ext act of **Red Cinchona Bark.** Some physicians add also the chlorides of ammonium, sodium, or gold. This treatment can be carried out in ordinary practice, and most effectively if the patient comes to the doctor for his injections. It is said to be also effective in cocainism and morphinism.

REFERENCES.—[1]*Gaz. d. Hôp.* July 6, 1905 ; [2]*Rev. Neur. & Psych.* 1903, p. 305; [3]*Ibid,* 1905, p. 321 ; [4]*Brit. Med. Jour.* Oct. 28, 1905 ; [5]*Jour. Ment. Sci.* Jan. 1905 ; [6]*Amer. Jour. Med. Sci.* Sept. 1905 ; [7]*Cent. f. Nervenh. & Psych.* Aug. 1, 1905 ; [8]*Jour. Ment. Sci.* Oct. 1904 ; [9]*Brit. Jour. Child. Dis.* July, 1904 ; [10]*Lancet,* Mar. 18, 1905 ; [11]*Rev. Neur. & Psych.* 1903, p. 781 ; [12]*Boston Med. and Surg. Jour.* Jan. 21, 1904 ; [13]*Amer. Jour. Insan.* Oct. 1904 ; [14]*Brit. Med. Jour.* Aug. 5, 1905 ; [15]*Edin. Med. Jour.* Jan. 1904 to Feb. 1905 ; [16]*Lancet,* Jan. 28, 1905 ; [17]*Jour. Ment. Sci.* April, 1905, *Rev. Neur. Psych.* 1905, p. 558 ; [18]*Brit. Med. Jour.* Feb. 25, 1905 ; [19]*Brain,* Spring, 1905 ; [20]*Brit. Med. Jour.* Jan. to Mar., and July 8, 1905 ; [21]*Amer. Jour. Insan.* Oct. 1904 ; [22]*Jour. Nerv. and Ment. Dis.* June, 1904 ; [23]*Jour. Ment. Sci.* July, 1905 ; [24]*Brit. Med. Jour.* Oct. 1905 ; [25]*Dublin Jour. Med. Sci.* Sept. 1905 ; [26]*Jour. Ment. Sci.* April, 1904.

INTESTINAL HÆMORRHAGE. (*See* HÆMORRHAGE.)

INTESTINES (Surgery of). *A. W. Mayo Robson, D.Sc., F.R.C.S.*

Obstruction.—The late J. W. Greig Smith used to dwell on the importance of the fact that patients died not from the stricture of the bowel or tumour causing obstruction, but from the absorption of poisons from the intestine above the obstruction, and this has been demonstrated by Kocher and other surgeons, who have shown the gangrenous and ulcerated condition of the intestines in such cases. The first principle, therefore, in operating should be, while giving relief to the obstruction, to drain the bowel above it; and secondarily, to remove the cause of the obstruction, which may, according to circumstances, either be done at the time or subsequently. Primary enterectomy should as a rule be limited to excision of tumours in the absence of obstruction, or to cases of gangrenous bowel.

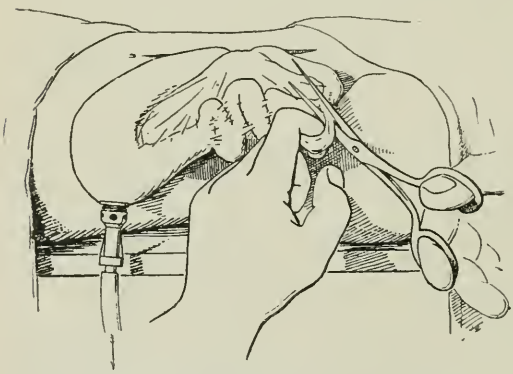

Fig. 37.—Carwardine's Enterostomy Tube in use during Operation.

Carwardine[1] performs a preliminary enterostomy, so that the bowel above the obstruction may be allowed to drain during the whole time of the operation. For this purpose he has devised a special enterostomy tube (*Fig.* 37). It has the disadvantage of cost over Paul's tube, but on the other hand, it is more secure, and does not strangulate

an area of the bowel wall—a consideration of importance, particularly in the small intestine.

In cases of cancer of the colon, where the growth can be brought out of the abdomen, McGraw[2] performs lateral anastomosis by means of the elastic ligature between the afferent and efferent limbs of the loop. The cancer, which has been drawn out of the abdomen through a lateral incision, is excised later. The divided end of the efferent limb is inverted and the skin sutured over it. A glass tube is inserted into the proximal end of the colon for the evacuation of fæces. Finally, when the anastomosis by elastic ligature has been completed, the end of the proximal limb is inverted and the skin incision closed.

Intussusception.—Several excellent reports on the operative treatment of intussusception have been published during the past year. Clubbe[3], of Sydney, gives an analysis of one hundred consecutive laparotomies. Of the first 50 cases, 25 lived and 25 died; of the second 50, 38 lived and 12 died, the great difference in the mortality being probably due to the fact that the children were sent into hospital earlier.

Irrigation of the bowel with oil or warm saline was always tried before operation, the patient being anæsthetized. Clubbe finds that it does away with the necessity for operation in 10 per cent of the cases. With regard to post-operative treatment, the patients are always given morphia $\frac{1}{20}$ to $\frac{1}{40}$ gr.; this is repeated if necessary. Strychnine is given hypodermically till the immediate shock passes; sometimes salines. Within twelve hours the colon is washed out with a weak solution of permanganate of potash. This nearly always produces a motion. If there is any difficulty with the bowels, small doses of calomel or castor oil are given.

Cole[4], of Melbourne, gives an analysis of 110 cases of intussusception admitted to the Melbourne Children's Hospital; 90 per cent were infants under one year, and males were in the majority. He considers the most important factor in the causation is congenital anomaly of the mesentery, an unusually long ascending mesocolon in particular. With regard to treatment, Cole advocates laparotomy, and looks upon irrigation as admissible only during the first six hours after onset. In the series, 73 per cent recovered after laparotomy, as against 46 per cent of cases treated by irrigation only. No case in which enterectomy was performed proved successful. In one case the appendix was found damaged at the operation, but was not removed; about three weeks after operation, suppurative appendicitis developed and proved fatal. In another case the cæcum became adherent to the parietal scar, causing acute and fatal obstruction, while a third patient developed a second intussusception after the first had been reduced, which necessitated a second laparotomy, happily successful.

A case of intussusception, apparently caused by a worm, is recorded by W. H. Brown[5]. The patient (aged three years) was found to be suffering from an enteric intussusception. Reduction was tried, but the peritoneal coat of the intestine ruptured several times in the

attempt, so enterectomy was performed. Paul's tubes were tied into each end of the gut, and the abdominal wound was then partially closed. Four subsequent operations were required before the integrity of the canal was restored. Eventually the child got quite well. The portion of intestine removed measured about twelve inches in length. There was a spiral constriction running round the intussusception from base to apex, and in it a round worm, fourteen inches long, was lying.

Israel[6] describes two cases of intussusception in children, with recovery, after an operation carried out on a new plan. The abdomen was incised over the intestinal mass and the colon sutured to the parietal peritoneum. The colon was then opened by a longitudinal incision and the intussusception drawn out until healthy gut was reached. At this point the intestine was cut through by degrees and the two serous layers carefully united by suture, step by step, so as to avoid all contamination of the free peritoneal cavity. The line of sutured intestine was then pushed back along the gut so as to unsheath the invagination. The artificial anus was kept open for a short time, as a precautionary measure, and then closed; both patients making good recoveries. The author warmly recommends this method as being useful in certain cases and much safer than the usual plan.

Typhoid Perforation.—Zesus[7] has collected, from every available source, 255 cases of perforating enteric ulcer in which laparotomy was performed, and shows, by comparing this with previous and less extensive returns, that there has of late been a decided improvement in the prognosis. In 95 of the 255 tabulated cases the operation was followed by recovery. The statistics analysed in this paper show that of 67 patients subjected to operative treatment within the first twenty-four hours 30 recovered, whilst 20 out of 23 thus treated at a later period died. The author considers the objections that have been raised to surgical treatment. The possible multiplicity of perforations can hardly, he holds, be regarded as a contra-indication, as the surgeon can deal just as readily with two or more perforations as with one. The subsequent occurrence of perforation in another part of the small intestine after laparotomy is very rare, and has been dealt with successfully by a second operation. In discussing the objection that it may be found difficult and indeed impossible to find a perforation on exposure of the intestines by laparotomy, he points out that there are two classes of cases in which such an accident has occurred; one class in which the actual existence of a perforation is demonstrated by the presence of gas and intestinal contents in the abdominal cavity, the other in which no indications of perforation beyond the pathological lesions of peritonitis are presented. In the recorded instances of the former class, laparotomy resulted in complete recovery. Of the second class, 20 cases have been collected, in 12 of which operative treatment was successful. With regard to the objection raised that it may be found very difficult on account of the soft condition of the inflamed intestinal coats to close the perforation

by suture, the author states that in two instances only in his large number of collected cases has such trouble been recorded. This difficulty, should it occur, may be overcome, he points out, by resection of the affected portion of intestine, or by stitching the perforated loop to the external wound.

Babler[8] emphasizes the following points: (1) Careful and complete bedside notes should be kept in every typhoid case; (2) Any sudden change in the patient's condition should be immediately and thoroughly investigated; (3) Sudden severe abdominal pain demands immediate and careful consideration; (4) Morphine should never be given in typhoid fever; (5) Early diagnosis and operation are requisites for obtaining ideal surgical results; (6) Drainage should be employed in every case of operation for typhoid perforation. The author insists on the importance of an hourly blood count in every patient presenting any symptoms indicative of impending perforation or in whom a perforation is suspected: a white count of more than 15,000 is an indication of the utmost significance, and if associated with pain and a high pulse-rate, demands exploratory incision. In opening the abdominal cavity, the right lateral incision will be usually found the most serviceable, as it fully exposes the cæcum and lower parts of the ileum. Free drainage of the pelvis should be employed in typhoid, as in every other form of bowel perforation. It would depend on circumstances whether an artificial anus be made or not. Cases have been reported in which suspicious areas perforated subsequently, and the drainage prevented any serious consequences.

References.—[1]*Pract.* Jan. 1905; [2]*Ann. Surg.* Nov. 1904; [3]*Brit. Med. Jour.* Jan. 17, 1905; [4]*Intercol. Med. Jour. of Aust.* Nov. and Dec. 1904 [5]*Lancet.* Sept. 16, 1905; [6]*Med. Rec.* May 20, 1905; [7]*Wien. Klin.* Nov. 1904. *Brit. Med. Jour.* Jan. 14, 1905; [8]*Bull. Washington, Univ.* March 20, 1905.

IRIS AND CILIARY BODY (Diseases of). *A. Hugh Thompson, M.D.*

Sympathetic Ophthalmia—.Dunn[1] proposes to drop the term "sympathetic ophthalmia," in favour of "*infective cyclitis*," as being a more accurate expression of modern views on the pathology of the disease. It is doubtless caused by a specific micro-organism, which creates a toxin which is conveyed, probably by the lymph channels, to the ciliary region of the so-called "sympathizing" eye, in which by its presence it sets up a severe form of irido-cyclitis. Both in respect to the frequency of occurrence and virulence of the attacks of this disease, we are, he says, in a vastly better position than our forefathers, a circumstance which is to be attributed not at all to the greater frequency with which injured eyes are excised, the reverse being probably the case, but entirely to the recognition in modern times of the baleful effect of micro-organisms and the consequent precautions which are taken. Since the conjunctival sac is peculiarly favourable for the growth of micro-organisms, one of the most important of these precautions in the case of operation wounds is a thorough *douching of the conjunctiva* with any sterile fluid, so as to ensure their mechanical removal. The so-called "sympathetic irritation" is not, as used to be thought, different in kind from the

more severe form of disease, but is merely a mild attack of cyclitis due to a correspondingly small dose of toxin.

Iritis.—Ophthalmic surgeons are beginning to be more alive than formerly to the danger to the eyes arising from oral sepsis. Kenneth Campbell[2] has seen three cases of iritis in which there was an absolutely negative history of either syphilis or rheumatism in any shape or form, but in all of which there was marked evidence of oral sepsis. The alveolar margins along the whole line of teeth were red and inflamed, the gums bled easily, on pressure small beads of pus welled up (pyorrhœa alveolaris), and the breath had a sour smell. Treatment of the oral condition was followed by rapid cure.

REFERENCES.—[1]*Lancet*, Aug. 13, 1904; [2]*Ibid*, July 22, 1905.

JEJUNOSTOMY. *A. W. Mayo Robson, D.Sc., F.R.C.S.*

Jejunostomy is an operation occasionally called for as a means of giving relief and prolonging life in patients suffering from advanced disease of the stomach, where on exploration it is discovered to be impracticable to perform gastrectomy, gastrostomy, or gastro-enterostomy.

The indications for the operation are :—

1. Extensive cancer of the stomach too advanced for gastrectomy, and in which no healthy spot of sufficient size on the stomach wall can be found for the purpose of gastrostomy or gastro-enterostomy.

2. General cicatricial contraction of the stomach, simple in character, and due to the swallowing of caustic fluid, in which the stomach has been so far damaged that it no longer performs its functions or even allows of the proper passage onwards of food.

It has also been suggested, in pronounced hyperchlorhydria, in preference to gastro-enterostomy in order to avoid peptic ulcer of the jejunum ; but as the latter is extremely rare and practically only associated with anterior gastro-enterostomy, a method that is being replaced by the posterior operation, I do not think surgeons generally will be likely to endorse Neumann's suggestion, nor do I think it likely that jejunostomy will be likely to replace other methods of securing rest in the treatment of hæmatemesis, as Cackovic has suggested.

For any operation to be a success the bowel must be so placed that it will serve the two purposes: (1) To permit the passage onward of the bile and pancreatic fluid poured into the intestine above the artificial fistula: (2) To allow of food being introduced through the fistula without fear of regurgitation, either of the food or of the intestinal contents.

The operation I have performed, and which I believe is new, consists in taking a loop of the beginning of the jejunum just sufficiently long to reach the surface without tension ; the two arms of the loop are short-circuited about three or four inches from the surface, the short-circuiting being done either by means of sutures around a decalcified bone bobbin or by sutures alone ; personally I prefer the former.

A small incision is then made into the top of the loop just large enough to admit a No. 12 Jaques catheter, which is inserted and passed for three inches down the distal arm of the loop; this is fixed to the margin of the incision in the gut by a silk or Pagenstecher's suture, and the entrance of the tube into the bowel is further guarded by two purse-string sutures, one over the other. The top of the loop is fixed to the skin by one or two stitches and the wound closed. The patient can then be fed at once with some peptonized milk and brandy. The whole operation can be done in from fifteen to twenty minutes, and with very little visceral exposure (*Fig.* 38).

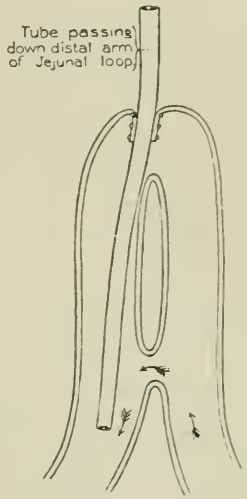

Fig. 38.—Jejunostomy by the author's method now described.

Should the patient be too ill to bear the little extra time occupied by the short-circuiting, the tube may be inserted as directed and surrounded by two or three purse-string sutures, a proceeding which can be accomplished in a few minutes. In this case the loop of bowel must not be brought to the skin, but had better be fixed by sutures to the peritoneal margin and the aponeurosis, in order to leave part of the lumen of the attached loop within the abdomen for the direct passage onwards of the intestinal fluid with the bile and pancreatic secretion.

As illustrating the relief that may follow this operation, in one patient in whom the stomach was found to be involved in cancer from end to end, and in whom the glands were extensively involved, rendering it clearly impossible to do a gastro-enterostomy, a jejunostomy prolonged life for a year, ten months of which were in comfort.

KALA-AZAR. *J. W. W. Stephens, M.D.*

Manson[1] records the finding of peculiar bodies besides the *Leishmania donovani* parasites in the spleen and liver of a case of this disease. They were oval or pyriform bodies, some nucleated, others not. Besides the nucleus, some showed a distinct but diffuse staining spot at the narrow end, and very rarely, a micro-nucleus as in the ordinary parasites. These bodies also formed chains. The individual bodies were about 7 μ long.

Manson suggests that oriental sore, in which bodies indistinguishable from *Leishmania donovani* are found, bears the same relation to kala-azar that vaccinia does to small-pox, and that the virulence of the kala-azar germ loses its virulence in passing through the camel. "This is conjecture," as Manson himself observes.

Leishman-Donovan Bodies.—Rogers[2] uses for the cultivation of these bodies, i.e., their multiplication and transference into flagellate forms,

a 5 per cent citrate of soda solution made distinctly acid with normal citric acid. He suggests that bugs or fleas may transmit the parasites.

James[3], in a study of kala-azar and "malarial cachexia," states that the two conditions are distinct and may be distinguished clinically. Malarial cachexia (in India) has three important signs: (1) Enlargement of the spleen; (2) A temperature curve showing definite periods of pyrexia and apyrexia (4-hour charts are absolutely necessary); (3) Absence of serious symptoms throughout the period during which the condition lasts. In the temperature charts of kala-azar these apyretic periods do not occur. In kala-azar, the fever, wasting, and enlarged spleen are the main features.

The Leishman-Donovan bodies are present in every case in the spleen. Parasites indistinguishable from them are also found in the ulcers of every case of tropical sore. The distribution of kala-azar and tropical ulcer is quite different. The fever in kala-azar bears no relation to the number of the parasites found. These are some points that suggest to the author caution in accepting the etiological importance of these parasites. During his investigations the author found that malaria was very unevenly distributed in Assam, and in some parts does not exist.

References.—[1]*Brit. Med. Jour.* 1905, p. 1263; [2]*Lancet*, June 3, 1905; [3]*Scientific Memoirs*, No. 19, Government of India, "On Kala-azar, Malaria, and Malarial Cachexia."

KIDNEYS (Surgical Diseases of). *E. Hurry Fenwick, F.R.C.S.*

Renal Calculi.—Zuckerkandl[1] deals with the diagnosis and operative treatment of primary renal calculi. Among the most important diagnostic symptoms he considers that the increase of pain on movement, and the disappearance of pain on resting, is a means of distinguishing this disease from other renal affections, such as pyonephrosis, tumour, etc. The urine contains albumin (even when the kidneys are not infected) and blood. When the red blood cells are sparse, the differential diagnosis is considerably strengthened. Skiagraphy also is a valuable aid to the diagnosis, and will render valuable data to an experienced examiner, as to the size and the kind of calculi present. Operative treatment should be undertaken in all cases when the stone is too large to pass through the urinary passages. For large, impacted calculi, Zuckerkandl prefers the operation of nephrotomy, while for small stones he finds pyelotomy is sufficient. When the kidney has been transformed into a fibrous mass of tissue, which is no longer capable of functioning, he recommends nephrectomy.

Renal Colic.—Angelo Signorelli[2] describes a symptom of renal colic on which little stress has been laid hitherto. It is a rhythmical pulsating pain felt in the loins, and in the testicle on the side affected. He relates the history of a case in which this symptom was well marked, and states that he has observed it in other cases of renal colic, but never in any other disease. It may, therefore, be of importance in the differential diagnosis between renal colic on the one hand and inflammatory affections in the neighbourhood of the kidneys or the appendix on

the other. The pulsations are synchronous with the cardiac pulsations, and to explain the symptom, Signorelli supposes that the pain of renal colic is due not only to the pressure exercised by the stone, and to the contractions of the muscular wall of the ureter, as has been hitherto believed, but also to increased tension in the kidney and its capsule. This tension would be increased at each heart-beat, and would thus cause rhythmical exacerbations of the pain.

Hæmatogenous Infection of the Kidneys.—Jordan[3], of Heidelberg, makes an important communication on this subject. He has observed twelve cases in which an abscess formed in or around the kidney, as a sequela of boils or other small peripheral suppurations. The abscess was localized and unilateral, and therefore differed from multiple abscesses of the kidney after infection. Jordan had only one case in which both kidneys were affected, the left kidney, however, being only in a state of inflammation without pus, and this subsided completely later on. There was no connection with the pelvis of the kidney, the urine being always normal. As regarded the situation of the abscesses, in one case the affection was intrarenal, in another perirenal. In six cases the abscess was on the anterior surface of the kidney. In most cases there was only a solitary abscess, in one there were several. No entrance gate to the poison could be proved. In five cases furuncle was the cause, in the others small superficial suppurations were the precedent condition, such as panaritium orchitis. The period of incubation was from one to four weeks. The localization was uncertain, and sometimes could only be fixed after the lapse of a fortnight or so. The reason why the disease was so often not recognized at first was that the general symptoms continued, and, later, remittent fever occupied such a prominent position. In the first few weeks local symptoms were not notable, but later on there was tenderness on pressure under the twelfth rib, and heightened resistance in the lumbar region. The diagnosis in the early stages was rendered easier by the knowledge of gate of entrance, by pain on pressure under the ribs and by the enlargement in the kidney region. In case of early diagnosis the prognosis was favourable.

As regarded treatment, it was well to wait until a perirenal abscess had formed. It was not advisable, however, to wait too long, as from the continued high fever and great pain, secondary abscesses and toxic nephritis might endanger the life of the patient. It was better, therefore, to expose the kidney and open the abscess. After this the symptoms subsided rapidly, and in from four to six weeks the patient was quite well. Sometimes a post-operative fever was observed, but this did not interfere with recovery. If multiple abscesses were found at the nephrotomy, nephrectomy was indicated, and the speaker had done this in eight cases. He resumed as follows :—(1) Intrarenal abscesses in consequence of a hæmatogenous infection were not rare ; (2) Early diagnosis was formed after determining a point of entrance, pain on pressure underneath the twelfth rib of the affected side and enlargement of the kidney ; (3) It was advisable to operate as early as possible.

Israel remarked that the truth of what had been said by Jordan was borne out by recent experiences. It was difficult to form an early diagnosis, and he must state that his own opinion was that the three symptoms mentioned by him, without a confirmation on the part of the urine, were of only doubtful significance. In three cases he had found a mixture of red blood corpuscles in the urine. He also remarked that erosion of the nasal mucous membrane was the point of entrance in one of his cases.

Movable Kidney.—Sir Frederick Treves[4] deals with the treatment of movable kidney in the following terms: "The literature of this subject has, I think, rather encouraged the belief that the only treatment of movable kidney is by operation. The operation of fixing the kidney in position by suturing has certainly been very extensively employed, and possibly with some little lack of discrimination. The risk of the procedure is very slight, and possibly the mortality of the operation at the present moment does not exceed 1 per cent. An operation, however, is neither justifiable nor commendable on the sole ground that it is attended with small risk. I have come to believe that nephrorraphy is by no means a routine measure in the treatment of movable kidney; that it is, indeed, not demanded in the great majority of the cases, and that, with one exception, it is to be regarded as the last, and not as the first, resource.

"The operation is not always successful. The methods of performing it are legion, but there is no procedure which can claim to be infallible, or to be exempt from occasional failure. By the earlier methods of operating failure was common. My experience leads me to believe that by all methods a lack of success is more common than is supposed or allowed. Keen, in reviewing a series of 116 cases at a period of not less than three months after the operation, considered that 57·8 per cent only were cured, 12·9 per cent were improved, while in 19·8 per cent the operation had failed. Apart from the mere failure to maintain the organ in place, the operation has been followed in certain instances by considerable neuralgia; sometimes in the renal region, and sometimes extending down the back and outer side of the thigh and leg. As in stone of the kidney, so after nephrorraphy, pain of a severe character has, on occasion, been experienced in the heel or in the sole of the foot.

"The operation, I venture to think, is imperative in cases in which there have been 'torsion symptoms,' and the sooner it is carried out in such instances the better. In cases in which the symptoms of movable kidney are those of the ordinary type, and in which all measures of treatment—short of operation—have failed, nephrorraphy may be considered. But I am under the impression that the instances of this kind in which the operation will be necessary will be exceedingly few. I venture to think that a time is not far distant when suturing of the kidney will become one of the rare operations of surgery.

"The treatment that appears to commend itself in the management of a case of movable kidney causing symptoms (short of those of

'torsion'), is the following Treatment by **Rest** in the recumbent position, with **Careful Feeding**, precise attention to the **Digestive Organs**, and **General Massage.** The so-called 'rest-cure' carried out for a month has not caused the movable kidney to cease to move, but it has rid the patient of her symptoms. In a quite large proportion of cases, neurasthenia is the major element in the train of troubles complained of, and the treatment of this condition alone has sufficed to cause the movable kidney to be forgotten. In such instances the mobility of the kidney is probably the least important factor, although it is the only apparent or palpable one. A lady who is worn out by the unceasing turmoil of a London season, and who ascribes her many symptoms to a movable kidney, will often lose all her troubles after sufficient rest. The same may be said of the lady who hunts four days a week, and of the many women generally who 'do too much.' While rest is not a panacea for all examples of movable kidney, it is at least an admirable preliminary to any more detailed treatment of the condition.

"In 1895—at a time when, in common with other surgeons, I regarded nephrorraphy as the only remedy for movable kidney—I was consulted by a lady whose objection to this or any other operation was such that that method of treatment was not discussable. I had already found that the many belts, pads, and supports designed for movable kidney were either utterly useless or at least quite unreliable. Now and then one would meet with a case of movable kidney in association with a very pendulous abdomen and some general enteroptosis, in which a belt proved to be of value or gave satisfactory relief. In the case of the lady in question I found that the kidney, which was very mobile, could be kept in place by the hand in all positions of the body, and even during such movements as are involved in violent coughing, etc. I asked Mr. Ernst to endeavour to make a **Truss,** upon a pattern I suggested, which would reproduce the pressure of the fingers.

"This instrument consists (*Fig.* 39) of a thin, carefully padded metal plate, which exercises pressure upon the abdominal wall by means of two springs. The pressure concerns the lower and inner margins of the plate, so that the kidney is forced upwards and outwards. It must of necessity be applied when the patient is lying down. It requires very careful fitting and adjustment, and it is useless to recommend the appliance to any patient who is not prepared to devote at least three or four sittings to the precise adjustment of the support. The instrument is light—weighing about six ounces—and is perfectly comfortable after it has been worn for a few days. Of its efficiency I can speak very definitely, for since 1895 I have abandoned the operation of nephrorraphy, except in the following examples—cases in which there were torsion symptoms; some cases in which the patient would be residing in the tropics; many hospital cases in which the patient had to work for her living, and could neither indulge in a long-sustained rest, nor properly manage a truss requiring some delicacy in its adjustment. Since 1895 Mr. Ernst informs me that he has made more than

300 of these trusses for me for patients in private practice. In 95 per cent of the cases the truss has proved absolutely efficient; the kidney has been kept in place, and the distress that had existed has entirely vanished. With the truss on, the patient has been able to take active exercise, to ride, and in an occasional instance, to hunt.

"It is needless to say that a truss will not cure neurasthenia. That condition must be dealt with by other measures. All that the truss claims to do is to keep a movable kidney from moving, and that—it may be pointed out—is all that the operation claims to do. In a large proportion of cases the truss can be given up at the end of eighteen months or two years."

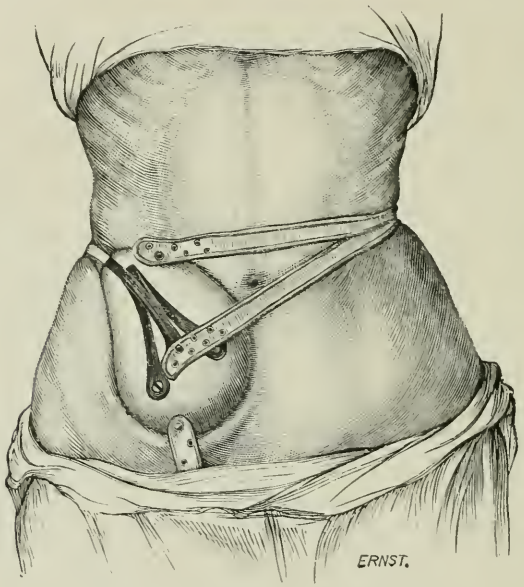

Fig. 39—The Ernst Truss for Movable Kidney.

A. Ernest Gallant[5] also voices the general feeling in the profession, when he asserts: It is especially true in dealing with movable kidneys, that the real art of modern surgery lay in knowing when *not* to operate. The unsatisfactory results obtained by many leading surgeons had led them to discourage nephropexy for the relief of prolapsed kidney; the 150 or more methods of operating, and the rapidly increasing number of observers who of late had accepted Glenard's theory that a movable kidney was but an index of a more general ptosis of several of the intra-abdominal viscera, notably the stomach, colon, liver, and spleen, compelled a more careful consideration and differentiation of the symptoms induced by each, in order to arrive at a satisfactory plan of treatment. Many now agreed with Glenard, "that the movable

kidney is merely an incident in a general ptosis, and the symptoms referred to the kidney are much more liable to be the result of the intestinal displacement, as is also the case in troubles caused by deformity or abnormal mobility of the spleen, liver, or kidney, and dilatation of the stomach"; and as symptoms due to kidney motility could be differentiated from those of gastro-intestinal origin, nephropexy was justifiable on displaced kidneys after operations on that organ or its ureter for any cause. Nephropexy, hepatopexy, splenopexy, gastropexy, gastroplication, suture of the recti, etc., might occasionally be indicated; but multiple operations on the same patient were not to be recommended. The chief cause of failure after nephropexy was that the kidney could not be fixed high enough above the waist line to avoid the constriction of the waist-bands and drag of the clothing, and it ought not to be employed unless the kidney lay above the waist-line. Nephropexy could but relieve the symptoms due to kidney instability, and in order to overcome the general ptosis Gallant, in 1901, evolved "a new principle in the adaptation of the ordinary corset for the treatment of Glenard's disease," viz.: Visceral replacement, by gravity, with patient in the dorsal position. Support of the replaced viscera by a made-to-order corset, constructed from measurements taken while the woman was lying down, laced with two sets of strings from above down, put on while in the semi-prone posture, and fastened from below upward. By this plan the organs were supported *in situ*, and could not fall while the corset was on and fitted snugly enough over the suprapubic area, loosely above the waist line, and curving gracefully at that point. With the support of all the viscera, nephropexy for movable kidney, *per se*, was rarely indicated; multiple operations could be avoided, and the woman placed in a curable condition.

Goelet asserts that the position of the kidney after fixation depended upon the suture at the time of operating. When suspension sutures were used it was an impossibility to get the kidney above the waist line. He sutured through the fibrous capsule, and attached the kidney to the structures of the back. The sutures were below the centre of the kidney and at the upper angle of the wound. If the kidney was abnormally large, care must be taken not to anchor it too high up, especially the right kidney. As to indications for fixation, Gallant admitted that operation was necessary when there were various conditions, as hydronephrosis, nephritis, etc., and he wished to emphasize the fact that he had better results by operating early, before such serious conditions occurred. He had operated upon 179 cases, with only one failure in securing permanent fixation of the kidney. This failure occurred because an abdominal section was also required, and he first fixed the kidney, then a week or so later did the abdominal section, and the vomiting caused by the anæsthetic loosened the kidney from its attachment. It was not true that nephritis was accompanied as a rule by general prolapsus. He thought belts and corsets were useful after operation, and before there was general ptosis In 75

per cent of the cases, there was nephritis or pyelitis, and in these cases a corset seemed to aggravate these affections.

Operations suggested for fixing Movable Kidney.—Andrew Fullerton [6] slings the movable kidney in the external arcuate ligament, but he does not claim for this operation that it exactly replaces the kidney in its normal position. The kidney is probably fixed a little lower than normal, but it is slung up by its own capsule, and for all practical purposes it is in excellent position. In the method about to be described use is made of the strong, thickened upper border of the lumbar fascia which stretches from the transverse process of the first lumbar vertebra (*Fig.* 40, T.) to the outer end of the last rib—the ligamentum arcuatum externum. This strong, thick band (L. A. E.,

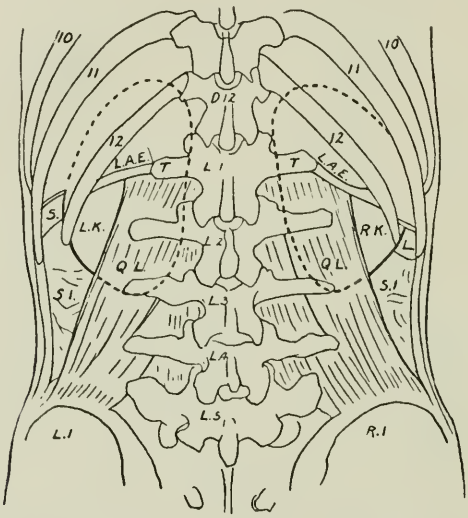

Fig. 40—The kidneys from behind; 10, 11, 12, ribs; T, transverse process of first lumbar vertebra; L. A. E, ligamentum arcuatum externum; Q. L, quadratus lumborum; L, liver; S spleen; S. I, small intestine covered by peritoneum; R. K, right kidney; L. K, left kidney.

Fig. 40) is very easily demonstrated from the incision for reposing the kidney, and is more horizontal than the last rib, besides being below the lower limit of the pleura. That portion of the ligament which is beyond the outer border of the quadratus lumborum (Q.L.) is made use of in this operation.

Operation.—An incision about 4 inches long is made from a little to the vertebral side of the angle between the last rib and the erector spinæ about a finger breadth below the rib, to obviate all risk of injury to the pleura. The direction is downwards and outwards towards the anterior superior iliac spine. Deepening the incision the following structures are cut: The latissimus dorsi, a few fibres of the serratus posticus inferior, the external oblique, the internal oblique, the transversalis, and the thin transversalis fascia. The last structure is first

nicked close to the vertebral end of the incision to avoid wounding the peritoneum and intestine, s.i. The kidney is then sought for by carefully tearing through the perirenal fat. It is pushed up to but not out of the wound, and a small puncture is made in the true capsule, so that a probe or director may be insinuated and a large blister gradually separated from the posterior (vertebral) surface and outer border of the kidney (see *Fig.* 40). This is the portion of the kidney that normally looks backwards, and, by peeling the capsule off here, the organ is kept as nearly as possible in its proper place. A horse-shoe-shaped flap of capsule can be separated, so that the base is just above the centre of the horizontal axis of the kidney. One blade of a blunt-pointed pair of scissors is now inserted under the blister, and the margin cut in the form represented in *Fig.* 40. To preserve the inner tilt of the upper border of the kidney, the inner limb of the incision may be made a little longer than the outer, as represented in the diagram (*Fig.* 40). The finger is now insinuated under the ligamentum arcuatum externum (L.A.E.), and the tissues on its deep surface peeled up, so as to get rid of the pleura should it descend lower than usual.

While the finger thus protects the pleura, an incision is made about a third of an inch or more above the lower margin of the ligament (L.A.E.), and parallel to its fibres for the whole available distance between the quadratus lumborum (Q.L.) and the tip of the last rib (12). The last dorsal nerve, which can be seen at this stage of the operation, should be avoided. A pair of Kocher's artery forceps is pushed through the slit thus made, and the free end of the separated capsule is drawn through, spread out, and stitched down to the ligament and neighbouring parts with formalin catgut or silk. The kidney is thus slung as on a pulley. Other stitches may be used to unite the capsule at the margins of the raw surface to the lumbar fascia at the sides, and below if considered necessary. The wound is sutured in layers, formalin catgut being used for the deep stitches, and silkworm gut for the skin.

"I have performed this operation on the cadaver," says Fullerton, "and three times so far on the living subject. It is easy to perform, and, so far as my short experience of it goes, it fixes the kidney effectually."

Swabbing the Capsule of the Kidney with Carbolic Acid.—Carwardine[7] advocates swabbing of the true capsule of the kidney with **Pure Carbolic Acid,** and keeping the organ in its new position in the loin by means of a gauze sling. The technique is as follows: The kidney is stripped of its fatty capsule in the usual way, but *in situ*. Gauze pads are then placed in the wound, and the whole surface of the exposed kidney is thoroughly painted with strong liquid carbolic acid two or three times by means of a swab held in pressure-forceps. The kidney becomes whitish in colour and sticky to the touch. The upper pole in particular should receive thorough treatment. The gauze is then removed from the wound and the kidney replaced into its normal position in the hypochondrium. The centre of a strip of iodoform gauze,

some 18 inches long, is next placed around the lower pole of the kidney, the ends remaining out of the wound. Its object is simply to act as a loose temporary sling for the kidney during the granulating stage, and after the anterior part of the wound has been sutured a second piece is inserted lightly down to the kidney, and over this the two ends of the first piece are tied loosely together. This securely anchors the kidney for the time, and prevents any possibility of its dropping out of place. Plenty of absorbent antiseptic dressing is applied, a firm pad of absorbent wool placed over the hypochondrium in front, and the whole secured by a carefully-adjusted binder. The sling of gauze may be left for ten days or a fortnight; in one instance it was left for three weeks without ill-effects.

Carwardine quotes eight cases, and asserts that he has been able to prove that the resulting fixation is so secure by the ultimate fibrous union that it becomes impossible to detach the kidney from the parietes, with which it becomes firmly incorporated, except by cutting it away.

Tuberculosis of Kidney.—Howard Kelly[8] considers this subject mainly from knowledge derived from the female. He concludes that the primary ascending form is most rare: he has not met with one case. He reflects the general surgical opinion when he says that when tuberculosis is once started, it finds in the kidney so favourable a nidus that the disease becomes, with perhaps the rarest exceptions, progressive. Time spent in trying to cure this disease by climatic or other methods is lost time, for the affection moves *pari passu* or *per saltum*, but in any case it advances. Delay in active treatment means courting the risk of involvement of other organs. A spontaneous cure is so rare an occurrence that Albarran could successfully challenge the French Surgical Society to produce an indubitable instance. Excluding cases of general and miliary tuberculosis, rarely seen by the surgeon, and excluding those forms of the disease in which it is but a late complication of an advanced and manifest tuberculosis elsewhere, usually pulmonary, we have to deal with a disease which is local and unilateral in its onset, and which may remain local and unilateral for months and even for years.

Diagnosis.—Kelly makes the following remarks on diagnosis: "The clinical history of this almost malignant bacterial infection of so delicate an organ is characterized by the invariable tendency of the disease to proceed step by step until the kidney has been completely destroyed, and *pari passu* with its local progress there is a tendency to become disseminated or to invade other vital organs. The clinical studies of the disease have further demonstrated the fact that the disease when it starts in the urinary tract always attacks one kidney first, and then the ureter, then the bladder, and that the involvement of the other kidney is fortunately almost always a late secondary affection. From these considerations it at once becomes evident that if the disease can be correctly diagnosed at an early stage, while it is as yet in the one kidney, a cure may be effected by a complete extirpation. The great question of importance in every urinary tuberculosis is as to

the accuracy of the diagnosis. In brief, the diagnostician has to consider: (1) Has the patient a tuberculosis of the urinary tract? (2) Is the disease still localized? (3) If the diseased kidney is removed, is the remaining kidney able to do the work?"

"A satisfactory diagnosis is made when tubercle bacilli are found in the urine at more than one examination, and preferably by more than one observer, and when these are traced upwards to one kidney and positively excluded from the other. In order to do this the urine as it is collected from the bladder must first be examined; then the separated urines (I use the plural discriminately) must be collected near their sources in the pelves of the kidneys. The diagnosis must include both the character and quality of the infection, as well as the abundance of the bacteria and the question of their constant or intermittent appearance in the urine. In an advanced case with all the signs present, the diagnosis is usually quite easy. The patient, often much emaciated and cachectic, has hectic fever, sweats, a rapid pulse, a furred tongue, and anorexia, with a more or less marked low hæmoglobin. There is, as a rule, constant vesical tenesmus, with the passage of urine loaded with pus and sometimes bloody. Palpation in the loin at once reveals, if it is not already manifest to the eye, a more or less manifest tumour on one side. On inspecting the body, scars may be found in the neck, in the axilla, or in the groin, or there may be a swollen joint, or distinct evidences of pulmonary disease. The family history in a large percentage of cases points strongly towards tuberculosis. On making a vaginal examination an enlarged cord-like ureter, sometimes nodular and sometimes so infiltrated and rod-like that it feels as though it would break under firm pressure, is felt through the anterior vaginal wall sweeping round the front of the cervix. Pressure upon this often induces an intense desire to urinate. The opposite fornix is, as a rule, soft and yielding, and here the practised touch readily detects the little normal yielding ureter slipping like a soft wet string between the fingers as it is handled bimanually or is pressed against the pelvic wall. If, in a case presenting such ear-marks, tubercle bacilli are found in a specimen of urine taken from the bladder by a catheter, the diagnosis is assured, and it only remains to determine further the condition of the bladder and of the opposite kidney by a cystoscopic examination, upon which I shall dwell more fully a little later. While the diagnosis of tuberculosis, renal and ureteral, becomes more easy as the disease advances, with the increasing involvement of the bladder comes the difficulty of finding the opposite orifice, and analysing the separated urines and so of differentiating the two sides; and when this is not done the diagnosis must be considered incomplete."

"The cases most difficult of diagnosis are the early ones, in which the bacilli are often sparse, or appear in the urine only at considerable intervals. We are obliged here to depend upon repeated examinations of large quantities of urine (twenty-four hours), allowed to stand, decanted, and then the sediment centrifugalized. Sometimes the

examiner only finds the bacillus after many hours of search repeated day after day. In this way one who has had experience, and whose suspicions have been aroused by an otherwise inexplicable slight pyuria, will sometimes succeed where others have failed. In all obscure cases one of the first steps should be to collect the urinary sediment and to inject it into two guinea-pigs, one into the peritoneal cavities and one under the skin of the groin or axilla. If there is tuberculosis, after three weeks the disease will have developed sufficiently to be recognized at the necropsy. The injection of tuberculin is valuable if, in addition to the fever induced, there is marked local reaction in the form of intense pain in the kidney. A practised examiner will in these early cases often detect a little thickening or hardening of a ureter on one side as compared with its fellow, which is significant and yet would ordinarily escape notice. It is in these doubtful cases, too, that the inspection of the ureteral orifices play such an important part; a tell-tale blush or puffiness or granular condition will often mark the diseased side. The ureteral catheter may then be introduced, and the urine from the infected kidney collected without dilution with that of its fellow. In case the diagnosis is not clear the physician can well afford to demand the important added element of time and observation, putting off any thought of operation while he keeps his eye on the patient from week to week, or perhaps from month to month."

"Any persistent acid pyuria, as Caspar insists, even of a mild grade, which does not yield an efflorescence of organisms with the ordinary culture media, should at once be placed under the category of suspected tuberculosis, and the urine centrifugalized and a test guinea-pig injected. The following plan is used, adopted from Belgard, cited by Caspar[9]: The urinary sediment, which has been centrifugalized and washed with sterile water, is injected both intraperitoneally and subcutaneously. The guinea-pigs should at first receive 0·5 cc. of the old Koch's T. B. If they are tuberculous when this dose is given it is deadly. One then receives an injection into the peritoneal cavity of the washed urinary sediment mixed in about 0·2 cc. of sterile water. The other receives the same quantity subcutaneously. If the urine contains tubercle bacilli, in from three to four weeks following the subcutaneous injection large palpable glands can be felt in the fore or hind feet according to the point inoculated. These glands have already begun to undergo cheesy degeneration, and contain tubercle bacilli. The intraperitoneally injected guinea-pigs develop a general miliary tuberculosis with characteristic nodules on the peritoneum, omentum, spleen, and in the lungs and kidneys. Any slight persistent cystitis rebellious to treatment should also always be suspected as a possible tuberculosis, and in such a case diagnosis must be looked upon as incomplete until the condition of the kidney has been investigated."

Cystoscopic Examination.—"I prefer to all other methods in these cases the direct aeroscopic examination of the bladder. If that

viscus is badly affected it is most difficult, as well as oftentimes most painful, to clear the bladder and to distend it sufficiently to see all parts clearly, especially the ureteral orifices. It is also still more difficult if there is a tight ureter, as well as hazardous to attempt to catheterize the kidney through a medium of contaminated fluid. By my direct method I can see all parts, and I do not frequently mistake a painful bladder which screams when the effort is made to distend it, for a contracted bladder, which is a rare bugbear in women. I can also cleanse the ureteral orifices before catheterization, and use hard metal as well as flexible catheters of various sizes in dealing with a rigid ureter. The ulcerated, suppurating, bleeding bladder is a common picture. An injected ureteral orifice, an ulcerated orifice on one side, a pocketed retracted orifice (Fenwick's "retracted orifice") a deep hole looking like a diverticulum (Fenwick's "golf-hole orifice") often tell the tale, and are finger-posts to the side diseased. If one orifice looks sound while the other is in the midst of a diseased area, the case promises well. In an advanced case, when most of the work is being done by one side, the orifice shows twice the normal activity, and it is easy to catch the urine as it spurts out in the lumen of the speculum and to collect it below and to subject it to a microscopical and bacteriological examination. One may thus avoid catheterizing the sound side, although I have yet to see any serious harm done by so doing. The diseased side may resist the entrance of the catheter, and when it is once engaged it may bite it so tightly that it feels as if held in a vice. If the urine does not flow after the catheter reaches the kidney it may be started by injecting a little bland fluid. There is no objection to leaving one or both catheters in the ureters for an hour or more. The urine collected in this way may be used for a bacteriological as well as chemical and microscopical examination, as it is uncontaminated."

"Let me here present in a categorical manner some of the alternatives to be borne in mind in making a diagnosis. (1) Is the organism found the smegma bacillus? How was the urine secured? Was it by voiding, or by catheterization? (2) Given the tubercle bacillus in the mixed urines, from which side does it come? Determine by catheterization, the appearance of the ureteral orifice and the thickened ureter. (3) Is the opposite side entirely free from disease? Bear in mind that a simple pyelitis is not infrequent in the opposite kidney. (4) Bear in mind that the opposite ureter may show marked thickening (perimetritis), and yet the kidney be free from tuberculosis. (5) Note carefully to what extent the bladder is affected, as having an important bearing upon the operation and subsequent treatment. (6) Determine the urea coefficient of the opposite kidney. Is it able to support life? (7) Look carefully for disease elsewhere. Is there a tuberculosis of the genital organs? Is there any pulmonary or glandular tuberculosis? (8) In injecting guinea-pigs remember that tubercle bacilli may pass out of the bladder if your patient has phthisis, without injury to the kidney (9) Remember that the enlarged kidney found in the loin may be the one functionally enlarged, and therefore the only sound

organ. Twice has such a kidney doing all the work of the body been taken out. There is a great risk of making this mistake. With the information afforded by such a complete analysis one is then ready to proceed to the operation with confidence, or at least with full knowledge of the risks incurred."

TREATMENT.—This consists in the extirpation of the disease in every case which will permit it. The supreme aim of surgery is conservatism; but in spite of some notable exceptions it has not done well here. The difficulty is that almost all tuberculous kidneys contain scattered foci of infection, which cannot be seen before the complete removal of the organ from the body. I would only be content to exsect the diseased area in rare cases in which the disease was evidently limited to one pole, as demonstrated by splitting the organ from end to end and down into the pelvis as it lay outside the body before ligation of the vessels and detachment.

Decapsulation of Kidneys for Chronic Nephritis.—The claims made by Edebohls for decapsulation of the kidney as a cure for chronic nephritis have now been fairly investigated by independent operators. There is almost a universal dissent in this year's literature from the opinion he has expressed and the operation which he had advocated, and the views expressed by the present Editor in criticism on the introduction of the method (*Medical Annual* 1902, p. 376) reflect the present tone of the profession after its trial.

Experimental Decapsulation.—N. H. Gifford[10] gives the following summary: Following the decapsulation of kidneys in rabbits, in normal dogs, in dogs with induced nephritis, in dogs with infarcted kidneys, but with additional work thrown upon them, the writer finds the following conditions: In all of his cases of two days and under and in the controls, the entire thickness of the capsule had been removed over two-thirds of the surface in the operation of decapsulation. There is a certain amount of intracapsular tension in undecapsulated kidneys, normal or with nephritis, as shown on removal of capsule. There is an immediate increase in size of decapsulated kidneys, persisting up to one month at least; afterwards, a decrease to approximately normal size complete at the end of six months. There is congestion, moderate in degree, most marked in the intertubular blood vessels in the cortex, lasting three to five days after the operation. No histological change in the renal epithelium follows the operation of decapsulation of kidneys. A new capsule, very vascular, at first two to four times the thickness of old, is well marked at the end of eight days. At the end of six months it returns to approximately the normal thickness and vascularity. The new capsule arises chiefly from the connective tissue cells of the intertubular connective-tissue, but in part from the retroperitoneal connective-tissue which is present in the new bed of the kidney. No new vessels are formed which anastomose with those of the kidney. The increase in size is due primarily to the increase in blood-supply, possibly resulting from the removal of the capsule.

Tuffier[11] has found that after decapsulation, the kidney becomes fixed to adjoining tissues by a fibrous cicatrix, much less vascular than the original capsule. His experiments on dogs, in which he enveloped the operated kidney in the great omentum, tied the vein, and constricted the renal artery for a time, later ligating it completely, thus hoping to supply the kidney with blood by anastomosis with the vessels of the omentum, are detailed. Subsequent removal of the other kidney had invariably fatal results. The kidney operated on gradually diminished in size after arterial ligature, while the other became enormously hypertrophied. Tuffier's conclusions are, that however beneficial the results of decapsulation may be, they are not due to compensatory peripheral neo-anastomosis.

Upon the basis of investigation conducted to determine the cause of the puzzling cures and improvements following renal decapsulation Thelcman[12] concludes that a new capsule is formed in a relatively short time—on the one hand from the remnants of the old capsule left at the operation, and the septa radiating into the kidney parenchyma, and on the other hand from the fat capsule. Decapsulation exerts upon the renal parenchyma no destructive influence worthy of mention. As to whether the operation favourably influences the clinical features of the disease, a transitory improvement, depending upon the temporary relief of tension, is of course plausible. Experiments thus far conducted on dogs, however, have not demonstrated an increase of vascularity in the new capsule, and as the former anatomical conditions have been restored even after fourteen days, it is very questionable whether a permanent cure can be obtained in man. The clinical results thus far obtained are by no means unassailable. The severe cases operated upon by Edebohls died; the mild ones have been improved, and some have recovered. At all events, the question whether the mild cases might not also have been cured without operation is admissible. Finally, the injurious effects caused by chloroform narcosis should also be borne in mind.

Elliot[13], of Chicago, records his opinion thus: The organic lesions of the kidney, grouped under the generic name of "Chronic Bright's Disease," have always been considered by the profession as incurable. A diagnosis of chronic Bright's disease carries with it to the mind of the laity the verdict of a hopeless prognosis. Broadly speaking, neither of these views is warranted by practical experience. Considered strictly from the histological viewpoint, the lesions of Bright's disease cannot be cured. It is true, nevertheless, that the existence of the disease does not prevent the attainment of even an advanced age, and the enjoyment of a fair share of physical activity for long periods of time. The ultimate prognosis is unquestionably bad, just as it is in all other progressive organic lesions, and it is undoubtedly true that if the patient survives the other ills of the flesh, he will eventually die of his nephritis. Yet the statement may be made, notwithstanding, that in a large proportion of cases which come under observation before the terminal stage of the disease has been reached, careful

attention to the details of diet, hygiene, and symptomatic therapy will be rewarded with results which are unsurpassed in any of the degenerative lesions of other organs. Even when the disease has entered the terminal stage, much can be done to prolong life and add to the sufferer's comfort by well-advised medical treatment. This assertion is advisedly made as prefatory statement to the consideration of the medical aspects of what surgery offers in the way of relief to the nephritic invalid, in order that we may combat one idea which is apt to obscure the question, viz., that the disease is an unmanageable one by medical treatment—that decapsulation is the *dernier ressort*, the one avenue of escape.

After a severe and critical analysis of 106 cases collected by Guiteras, Elliot concludes that: The mistake is made of interpreting certain cases as Bright's disease, which are merely albuminuria associated with movable kidney. The cases designated "unilateral chronic interstitial nephritis" contained in Edebohls's list of cases, published December 21, 1901 (*Med. Rec.*), were undoubtedly of this character. It is a suggestive fact that all these cases of unilateral nephritis were in women, and that in nearly every case a suspiciously prompt symptomatic cure took place by means of single or double nephropexy! There is but one case of unilateral chronic nephritis contained in the operative records of other surgeons. This was a case (Guiteras, case No. 105), in which the right kidney was discovered to be congenitally absent at the time of operation. It may be affirmed that true chronic nephritis of systemic, not local, origin, when it has become clinically recognizable, can be unilateral under only one circumstance, i.e., absence of the other kidney. It is freely conceded that the kidneys may be very unequally involved, and upon examination, present very different gross and microscopical appearances. Unequal involvement is, however, not unilateral nephritis. Cases of floating kidney with albuminuria are the ones which have been most signally benefited by operation.

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KNEE JOINT.

Priestley Leech, M.D., F.R.C.S.

Sir W. H. Bennett[1] reports on a series of 750 cases of recurrent effusion into the knee joint, which recurred either spontaneously or after a second injury (which was generally slight), and in which the effusion and symptoms due to the injury which had first caused them had entirely disappeared. There were 509 cases entirely independent of any constitutional condition, and of these there were 428 in which the symptoms of internal derangement were very slight. In 59 cases there were no other symptoms than mere recurrence of effusion without

noticeable further injury, but in 12 of them in which an operation was done, the internal semilunar cartilage was found to be detached and displaced in 5, the external one in 1, and in one of the cases both semilunar cartilages were displaced. In 5 cases operated on nothing could be found. There were 21 obvious cases of loose bodies in the joint. Genu valgum was present in four.

There were 241 cases influenced by constitutional conditions. In these cases the existence of a constitutional dyscrasia exercises a considerable influence, (*a*) in leading to the occurrence of symptoms from very slight causes, and (*b*) in rendering recovery difficult or impossible unless the constitutional conditions be treated, or, at all events, taken into account. The cases in this group were as follows: Osteo-arthritis, 107; rheumatism and gout, 30; syphilis, 42; gonorrhœal rheumatism, 28; malaria, 18; hæmophilia, 3; quiet effusion in young people, 13.

Reference.—[1]*Lancet*, Jan. 7, 1905.

LABOUR. *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*
Victor Bonney, M.S., M.D., B.Sc., F.R.C.S.

Methods of Rapid Artificial Delivery.—By far the best review that has appeared of late years on this important subject is that of Fothergill[1], which we particularly commend to all who practise obstetrics. The means by which the viable fœtus may be rapidly extracted from the uterus, per vias naturales, are briefly as follows:—

1. Manual dilatation, followed by internal podalic version.
2. Instrumental dilatation, followed by version or forceps.
3. Vaginal Cæsarean section.

It will be noticed that the use of Champetier de Ribes' bag is *not* included in this list. We entirely agree with Fothergill that this excellent invention was not intended and should never be used for forcible dilatation of the cervix. It is the best method known to us of inducing *premature*, but otherwise *natural* dilatation; but anyone with experience in its use, and an understanding of the mechanics of its action, knows that it is not only impossible to satisfactorily exercise a tractive force on the cervix by its means, but that it is actually undesirable, and defeats the best aims of the instrument.

Mechanism of Natural Cervical Dilatation.—The vaginal cervix may be regarded as a reduplication of the wall of the genital canal. The uterine musculature during pregnancy undergoes a peculiar lamination, so that it may be regarded as consisting of a series of concentric muscle cylinders, the fibres that make up such cylinder running in all sorts of directions in a plexiform manner.

If a muscle cylinder having this structure contracts, two things happen: (*a*) It shortens; and (*b*) it constricts. What is true of the part is equally true of the whole, and the uterus in the first stage of labour both constricts and shortens. The constricting action forces the bag of membranes into the cervix, producing a centrifugal dilatation. The shortening action, which is exercised from below upwards,

as the fundus is unable to descend, pulls out the cervical reduplication, or in other words, draws the external os over the bulging lower pole of the bag of waters. When full dilatation is reached, the cervical reduplication has entirely disappeared, or in other words, the vagina and uterine cavity form one continuous canal.

Manual and Instrumental Dilatation.—It therefore follows that no method of artificial cervical dilatation which does not imitate this dual mechanism can be considered to be without objection; and at present we have no such method.

Herein lies the advantage of the hydrostatic bag, which acts by stimulating the natural forces and not by replacing them. Unfortunately this method, perfect as it is mechanically, is not fast enough where urgency presses.

Manual dilatation of the cervix is the oldest means of "*accouchement forcé*," and has this advantage over all others, that the necessary means are always with us. But its uses are limited. In some cases it is undoubtedly the method of choice, particularly in severe ante-partum hæmorrhage, when in consequence of the collapse of the patient the uterine tissue is atonic, and dilatation easily affected. In eclampsia, on the other hand, the cervix is often in a state of marked rigidity, and sufficient force cannot be applied this way.

Hence came the demand for the more powerful aid of instrumental dilatation. The four-bladed dilator introduced by Bossi has attracted wide attention, and evidence as to the results of its use is rapidly accumulating. Ballantyne[2] has used it with success in certain cases, and speaks well of it in eclampsia. Hirst[3] has used it twenty-five times, with increasing predisposition in its favour. Ehrlich[4] reports thirty cases in which it has been used to advantage, though he admits the liability to cervical tearing. Gairdner[5] and Schurmann[6] report well of it, and Munro Kerr states that even before the vaginal cervix is obliterated, dilatation can be secured with safety if sufficient care and time be exercised.

On all hands the liability to laceration of the cervix is admitted, and it will be obvious from a consideration of the physiological mechanism of cervical dilatation that, since the instrument can only imitate one factor in the normal process (centrifugal expansion), tearing of the parts must follow almost as a matter of course, more particularly in those cases in which this procedure is carried out *in the absence of uterine action*. Some of these tears appear to have begun by "digging" of the posterior blade into the cervical tissue, owing to the absence of a correct pelvic curve. To obviate this De Seigneur has introduced an improved instrument. Tears are minimized by taking time over the dilating process. Gairdner advises three minutes for each centimetre of dilatation. All authorities would allow half-an-hour at least for complete dilatation, and many much longer As Ballantyne says, the instrument requires to be used "more by the head" than by the hand. But since the instrument of necessity lacks one natural factor in dilatation, namely,

the pulling out of the cervical "slack," complete freedom from laceration cannot in reason be expected, no matter what care be taken.

Vaginal Cæsarean Section.—To avoid this accident, and at the same time to effect delivery even more quickly, Duhrssen has advocated vaginal Cæsarean section. In Fothergill's excellent paper this procedure is considered at length, and a study of it leaves the impression that the operation has many sound advantages. The anterior vaginal reflexion is incised transversely, and the bladder pushed off the front of the uterus as in vaginal hysterectomy, but without opening the anterior utero-vesical peritoneal pouch. The front of the uterus is now split up in the middle line from the external os as high as, but not through, the peritoneal reflexion. If more room be required the cervix is also divided posteriorly. The child is now delivered, and the incisions closed by suture

This operation is an easy one, especially where a capacious vagina is present. In primiparæ the vaginal outlet may require a preliminary enlarging by bilateral postero-lateral incisions. The operation has been performed with success by several obstetricians in England, and will doubtless be repeated.

Puerperal Fever.—A. G. R. Foulerton and Victor Bonney[7] have made a lengthy contribution to the bacteriology of puerperal infections, with special reference to their appropriate treatment. From the examination of the contents of the genital canal in fifty-four consecutive cases of puerperal fever, they found that these may be divided into those due to uterine infection and those due to cervical or vaginal infection. Uterine infection is by far the most severe on the whole, the temperature nearly always exceeding 102° F., with acute febrile symptoms. Vaginal or cervical infection produces slighter symptoms. This difference in the severity is probably chiefly due to the difference in the relative frequency of the more virulent pathogenic organisms found in the two classes of case.

In uterine (placental site) infection the streptococcus pyogenes is present in 62·5 per cent of the cases. Next to this in frequency these authors have found the diplococcus pneumoniæ (10 per cent). From these findings it is obviously the duty of anyone in charge of a case of puerperal infection in which no obvious lacerations of the vagina or cervix are present, to treat it as due to streptococcic infection until bacteriological confirmation or the reverse can be obtained.

It cannot be sufficintly eurged that to obtain satisfactory results from the use of antistreptococcic serum it must be given early. There is some evidence to show that the fatal result in some of these cases may be determined by secondary infection with the B. coli communis. At all events, in the ten streptococcic cases that terminated in death recorded by the authors, the colon bacillus was present in the uterus with the streptococcus on eight occasions. If such be the case it can easily be understood that a serum which might have been antitoxic to the streptococcus alone, is powerless against the combined infection.

These authors have found considerable differences in the various

strains of streptococci isolated. To meet this difficulty a **Polyvalent Serum** was made from five different strains of the streptococci isolated in these investigations. Foulerton[8] has summed up this subject, and has recorded a few cases treated by this serum, which is still upon trial. It seems certain that it is in this direction that the specific cure of streptococcic infection is to be looked for.

When the infection was limited to the cervix or vagina, the milder staphylococcus albus is the predominant organism, and it is to this fact that the relative benignity of "lower route" infection is due. Staphylococcic infection of the uterus was recorded by these investigators in a small number of cases, and the symptoms, when due to staphylococcus albus, were mild. Only once was the more virulent staphylococcus aureus present, and here the patient was proportionately ill.

A point worthy of note is that streptococcic infection may (though beginning fulminantly) abort, the temperature abruptly falling in a few days. These cases may mislead the practitioner into thinking that he has to deal with a less virulent infection, and thus, if want of care be exercised, other patients may become infected, but with a less favourable termination. On the question of the source of the infection Foulerton and Bonney are of opinion that the bulk of the cases are undoubtedly heterogenetic, and are probably to be ascribed to the attendant. The less severe forms of the disease which result from gonococcic or staphylococcic infection may well be autogenetic.

These authors investigated the bacteriology of chronic cervicitis, with a view to ascertaining if it bore any relation to the puerperal infections. Streptococci were never found in chronic cervicitis, but staphylococci, gonococci, and other organisms which had also been isolated from cases of puerperal fever, were commonly present. Clearly a patient who suffered before delivery from such infections might easily get an extension into the uterine cavity during labour or the puerperium. The vast majority of the severer cases are undoubtedly conveyed from without, however, and as Williams[9] has put it, the mortality is preventable.

Both this author, Boxall[10], and Dakin[11], have again emphasized the fact that the mortality due to puerperal fever remains where it did, in spite of modern teaching. This is, of course, excepting the lying-in hospitals, in which it has been reduced to practically nil. Williams hopes much from the Midwives Act, whilst Dakin appeared to suggest that the maintenance of the death-rate of puerperal fever at its present standard is at least as much due to the practitioner as to the nurse. Needless to say this view called forth various protests. We think, however, that the real solution of the problem is to be found in the patient herself and her surroundings. Until a more general cleanliness is observed by the lower classes, the number of cases of puerperal fever will not appreciably diminish. Though doubtless the average obstetric practice of medical men and midwives still leaves something to be desired in the matter of asepticity, yet there

can be no doubt that the use of antiseptic precautions in some degree or other is adopted by most of them. Yet the mortality remains where it did, which suggests some constant factor in its production. This we strongly believe to be the unclean condition of the patient and her surroundings. Perfect asepticity is impossible even in a carefully-ordered hospital; how much the more is it impossible in the filthy homes of the lower classes, amongst whom the disease is chiefly rife. It is futile to blame alone the doctor, or nurse, for puerperal sepsis which follows a labour in which the supply of warm water is limited by the capacity of a half-a-pint kettle; the soap to a small lump of a dirty brown-yellow colour, which suffices for the needs of the whole family; sheets and blankets which smell fusty and sickly from long use; table, chairs, and furniture in general, which are covered with the droppings of flies and hoary with the dust and dirt of ages. The very lying-in linen and diapers are not clean, whilst the patient's own skin has for years only known the cleansing effects of a bath once a week, if so often. The strictest antiseptic precautions under such conditions might fail. How much the more then, where such measures are impossible to carry out except in the crudest way? No one, we venture to think, who has experience of lower-class midwifery, will deny these facts; and so without in the least detracting from the importance of the antiseptic and aseptic training of the attendants, we would put in a strong plea for the better education of the lower classes in the importance of cleanliness during pregnancy, labour, and the puerperium.

Foulerton and Bonney strongly advise early exploration of the uterus as soon as the temperature and general symptoms suggest uterine infection, and pending the result of a bacteriological examination of the uterine contents, the injection of a **Polyvalent Antistreptococcus Serum** in large quantities. At least 50 cc. should be given in twenty-four hours. If at the expiry of this term no improvement is manifest, the serum should be changed for some other make. The contents of the uterus obtained at the exploratory operation should be subjected to bacteriological examination at once, and thus a definite indication as to the proper line of treatment is obtained. It is obviously useless to use antistreptococcus serum in pneumococcic infection. It is possible that, when some form of colon bacillus serum is obtainable, the results of serum treatment may be greatly improved, since this bacillus so often complicates the primary infection.

Cristeann[12] has discussed at length the advisability of **Hysterectomy** in puerperal infection. The figures that he gives show a terrible mortality, and his conclusions are, on the whole, adverse to the proceeding. With this, most English obstetricians would heartily agree. Bumm[13] has successfully **Ligatured** the pelvic veins for chronic puerperal pyæmia on two occasions, and Fabio reports a case successfully treated by **Intravenous Injections** of mercuric chloride.

A survey of the recent work on this subject suggests that the greater number of fatal cases are due to a want of early appreciation of the

gravity of the condition, and a consequent neglect of early remedial measures. Of puerperal fever it may be said that the prognosis becomes increasingly bad with each day lost in the beginning of treatment.

REFERENCES.—[1]*Pract.* April, 1905; [2]*Brit. Gyn. Jour.* Feb. 1904; [3]*New York Med. Jour.* May 13, 1905; [4]*Forts. d. Med.* Dec. 1, 1904; [5]*Brit. Jour. Obst. and Gyn.* Vol. iv. No. 4; [6]*Ibid*, Vol. iv. No. 6; [7]*Lancet*, April 8 and 15, 1905; [8]*Ibid*, Dec. 31, 1904; [9]*Ibid*, July 9, 1904; [10]*Trans. Obst. Soc.* May, 1905; [11]*Ibid*, March, 1905; [12]*Rev. de Gyn. et de Chir. Abd.* July-August, 1904 [13]*Centr. f. Gyn.* 5, 1905.

LEISHMAN-DONOVAN BODIES. (*See* KALA-AZAR.)

LENS (Diseases of). *A. Hugh Thompson, M.D.*

Cataract.—Ophthalmological literature has of late been much occupied with the pathogenesis of senile cataract. Some authorities look to a change in the osmotic condition of the aqueous humour, depending on alteration in the condition of the blood itself, as the essential cause; while others are inclined to attribute it to the direct action of toxic substances, from which the lens substance is normally protected by the secretory functions of the ciliary body. To the former school belongs Grilli[1], who finds that in cataractous patients there is an insufficient elimination of solids via the kidneys. The increased osmotic tension of the fluid surrounding the lens causes it to yield up some of its fluid, and this produces cataract. The theory purports to explain glass-blowers' cataract by the extreme perspiration induced by their labour, which produces a rise in the osmotic tension of the blood, and the same is held to be true of the cataract of diabetes.

Similarly Peters[2] attributes naphthalin cataract to an irido-cyclitis causing a change in the composition of the aqueous humour. On the other hand Leber[3] criticizes Peters' methods, and Römer[4] combats the idea that there is any direct connection between the osmotic properties of the aqueous and cataract. Experiment proves that the osmotic pressure may be varied to a surprising degree without affecting the lens at all. According to this authority the lens becomes cataractous owing to the attack of a poisonous substance, which kills its protoplasm in a way analogous to that by which a red corpuscle is destroyed by the process of hæmolysis. According to his theory these toxic substances are the normal products of old age, but in most people the lens is protected by the selective secretory action of the ciliary body. Two difficulties in accepting such a view occur: (1) The assumption that any animal can produce substances toxic to itself without a departure from the normal processes of health; and (2) The cause of the damage to the ciliary bodies which prevents them from keeping back the toxic substances which cause cataract. The whole controversy illustrates what a short way scientific pathology has yet travelled in giving a final explanation of some of the commonest diseases.

Few cases of eye disease demand so much patience on the part of the sufferers, or judgment on the part of the surgeon, as those of double unripe cataract with clear cortex. McKeown's method of irrigation

was mentioned in last year's *Annual*. An alternative method of dealing with these cases is that of **Trituration of the Lens,** which in the hands of McHardy[5] has shown most satisfactory results. His method is, after having performed a preliminary iridectomy and allowed the aqueous to escape, gently to stroke the outer surface of the cornea with a shell or silver spoon in a radiating direction from the centre, observing that the iris always slips away in front of each stroke of the spoon. That this method, like so many other surgical procedures, is hardly likely to give such good results in the hands of other surgeons as in those of its originator, is indicated by McHardy's statistics. Whereas in his first 25 selected cases, more than one-quarter were insufficiently ripened by a single trituration, in his recent cases this applied to only 1·5 per cent. Again, while in the early cases troublesome iritis occurred in 13 per cent, in the late cases only in 1·25 per cent, and while in the early cases slight loss of vitreous occurred during the subsequent extraction in as many as 28 per cent, in the late cases it was only in 1·5 per cent. Obviously the method has its dangers in unpractised hands, and its comparative failure to effect its object in the hands of other experienced surgeons is probably accounted for by the excessive caution practised by them in view of these dangers.

Early Discission of the Posterior Capsule (from the eighth to the fifteenth day after the removal of cataract) is practised by De Lapersonne[6], of Paris. A special needle is introduced through the sclera, 1 or 2 mm. above the summit of the original flap made during the extraction. The capsule is thus attacked from behind before it has had time to lose its elasticity, the cause to which most of the failures which follow needling at a late stage are attributed. Early discission is no doubt to be preferred to late discission ; but there is moderation in all things, and to subject a patient to a second operation within a fortnight of an extraction seems unnecessarily risky. Moreover it is not clear what is gained by attacking the capsule from behind rather than from in front, as is usual.

References.—[1]*Ophth. Rev.* 1904, p. 302 ; [2]*Ibid,* July, 1905 ; [3]*Ibid* ; [4]*Ibid* ; [5]*Brit. Med. Jour.* Nov. 12, 1904; [6]*Ophthalm.* 1904, p. 387.

LEPROSY.

G. Armauer Hansen, M.D., Bergen.

Since the writer last reported on leprosy in the *Annual* for 1897, the following works by Norwegian authors have appeared on the subject. "Die Lepra des Auges," clinical studies by Dr. Lyder Borthen, with pathological investigations by Dr. H. P. Lie, Leipzig, published by Wilhelm Engelmann, 1899. "Die Blindenverhältnisse bei der Lepra," by Dr. Lyder Borthen, Kristiania, 1902. "Die Lepra im Rückenmark und den peripheren Nérven," by Dr. H. P. Lie. Leprous diseases of the eyes have been dealt with previously by Dr. O. B. Bull and the writer, by Dr. Böckmann, and by Dr. Kaurin, but have never been so beautifully illustrated as in the work of Dr. Borthen, who also gives a detailed clinical description of the different affections. It was thought that the iritis in anæsthetic patients with logophthalmos was caused by extension

of the disease from the cornea to the deeper parts ; but Dr. Borthen's researches, and especially the further study by Dr. Lie of the morbid anatomy, which he has illustrated with beautiful drawings, has shown that the iritis of anæsthetic leprosy is caused by the lepra bacillus. Dr. Borthen shows in his other work, how often the leprous diseases of the eyes cause blindness. This work is essentially statistical, giving the percentages of the patients afflicted with blindness from the different forms of the disease, and in the different sexes. The general results are the following :—

	Leprous Men	Leprous Women	Total
Not blind ..	83=71·55% ..	115=71·43% ..	198=71·48%
One eye blind ..	14=12·07% ..	18=11·18% ..	32=11·55%
Both eyes blind ..	19=16·38% ..	28=17·38% ..	47=16·98%

Of the maculo-anæsthetic patients 28·88 per cent are blind. Of the tuberculous patients, 56·10 per cent are blind. Since nodules frequently occur in the cornea of a tuberculous patient, and always with concurrent iritis or iridocyclitis, the blindness may be caused both by the affections of the cornea and by the iritis or the iridocyclitis. The logophthalmos of maculo-anæsthetic patients *per se* never causes blindness—which is always due to affections of the iris or the corpus ciliare.

Dr. Borthen has examined the lepers in all our three asylums, and the large number of patients examined render his results very reliable, at least as to the eyes of lepers in Norway.

The writer taught for many years that lepers of the maculo-anæsthetic type, when all skin affections had disappeared and there only remained anæsthesia and atrophy of the muscles, could be regarded as healed of their leprosy, and only suffering from the consequences of the destruction of certain nerve-trunks. The researches of Dr. Lie on the maculo-anæsthetic form of the disease have proved this teaching to be unsound, as he has found lepra bacilli in the spinal cord and in the nerves, in one case after fifty years' duration of the disease, in a patient who from the tuberculous state had become anæsthetic, which is the usual course of the disease, when the patient lives long enough for the transformation, which is but seldom. Dr. Lie has also demonstrated bacilli in the spinal cord and nerves after very long duration of the disease in maculo-anæsthetic patients, whom the writer had himself regarded as cured. We cannot say whether these bacilli are living or dead ; and from a clinical point of view we probably may regard them as harmless, because they are deposited in localities from which they cannot come to the surface, but so long as bacilli are found, we are unable to consider such cases as cured. Dr. Lie has, however, met with cases in which he could find no bacilli : these may of course be regarded as healed, and the writer's opinion that the course of the disease is towards ultimate healing is proved so far correct, only the patients generally die before the course is completed.

The present writer cannot say, on the other hand, that he has ever seen such a patient die directly of his leprosy. Lepers most frequently succumb to kidney diseases. These affections may, however, with great

probability, be regarded as caused by the leprosy; not indeed by the bacilli, which are very seldom to be found in the kidneys, but probably by the toxins produced by them.

Dr. Lie has further found bacilli in all the cutaneous affections of the maculo-anæsthetic form of leprosy which he has examined, and especially in the small cutaneous nerves. From these the bacilli wander upwards to the nerve-stems, and here they multiply in the well-known localities, where the nerves pass in close proximity to bones, and where they are exposed to trauma, as at the elbow for the ulnar nerve, and the capitulum fibulæ for the peroneal nerve. Some have thought that the patches of the maculo-anæsthetic form were symptoms of the affection of the central nervous system, or of the spinal cord; but when bacilli are found in the skin affections, this can hardly be the case. Moreover the bacilli cause very little changes in the spinal cord. The nerve cells in the anterior horns of the grey substance in which the bacilli are found become vacuolated; generally there are only one or two bacilli in a cell, although very rarely some cells are quite filled with them. The other change which is found in the spinal cord is atrophy of the nerve-fibres in the posterior columns, dependent on the affection of the peripheral nerves. When the disease is more or less one-sided, as occasionally happens, the atrophy in the spinal cord is correspondingly more or less one-sided also.

It has hitherto been an unsolved question, how or why the lepra bacillus causes two such different forms of the disease as the nodular and the maculo-anæsthetic. Whether the bacillus differs in virulence, we cannot say, because we have no means of testing it. Dr. Lie thinks that it may be dependent upon the power of resistance in the patients. In the maculo-anæsthetic form there are always very few bacilli in the skin affections, but many cells; in the nodular form there are always more bacilli than cells. Dr. Lie concludes from this that some subjects possess greater power of resistance to the bacillus, and these are the maculo-anæsthetic patients. Some people should, therefore, be more predisposed to leprosy than others. Predisposition, however, is but an expression for the fact; it offers no explanation of it. In the eastern part of Norway, which has a dry climate, the maculo-anæsthetic form of leprosy has ever been prevalent, while on the west coast, with a moist and stormy climate, the nodular form has been more frequent. At the west coast the inhabitants are almost all fishermen, and consequently very exposed to the storms and rains from the sea. Many faces are to be seen here resembling that of a nodular leper, red and swollen, with the small blood-vessels dilated. We know that the lepra bacilli are very often imbedded in the endothelial cells of the blood-vessels, and as the blood current must be slower in the dilated vessels, it is probable that the bacilli more easily settle down in those vessels, and it is not improbable that the tissues around them are nourished otherwise than around vessels of normal size. Possibly, therefore, climate may have something to do with producing the two forms of leprosy. It is also possible that the brachycephalic population

of the west coast of Norway might be less vigorous than the dolichocephalic one of eastern Norway, and therefore more easily become nodular. But against this is the fact that in the district of Stavanger, where the population is for the most part brachycephalic, the maculo-anæsthetic form is relatively almost as frequent as in the eastern parts of the country.

Speculative as these theories are, and of little weight, perhaps they may stimulate further researches.

The periodical *Lepra*, founded by the International Congress on Leprosy in Berlin in 1897, has contained many valuable papers on leprosy and its distribution. Of these, one by Dr. Glück on "Paraleprosis" is worth mention. As mentioned in the *Medical Annual* of 1897, Dr. Zambaco, Pasha of Constantinople, has contended that syringomyelia and Morvan's disease are nothing but modified forms of leprosy; others have concurred in this view. Recently Dr. Glück, a very able observer, has found that children of lepers may show symptoms which are not leprous, but dependent on the leprosy of their progenitors. He has found thickened ulnar nerves, curving of the fingers, atrophy of the muscles of the hand, but without anæsthesia, in children and grandchildren of lepers, and these symptoms he designates as paraleprotic. He recalls how French authors have described syphilitic symptoms which were not dependent on syphilis in the bearer, but on syphilis of the parent. The writer is no authority on that subject, but was aware of the possibility of hereditary transmission of structural changes produced by syphilis and leprosy, when he in 1871 and 1872 made his first researches on leprosy in the country districts of Norway. He found that the late Dr. Adam Owre, of Christiania, knew of no example of such a hereditary transmission in syphilis, and the writer, after examining many children of lepers, never found anything that could point in this direction. As he then expressed it, the children were all sound: they ate well, worked well, and slept well. In consequence, the statements of Glück need confirmation, and therefore the writer last summer examined about 250 children and grandchildren of lepers. He found some curved fingers, but the curving was in all cases caused by panaritium, and he was unable to find a single thickened ulnar nerve. It may be that leprosy has not been long enough in Norway to become sufficiently attenuated to exhibit all the forms to be found in other parts of Europe; but if Glück is correct it is certainly remarkable that the writer did not meet with a single case.

The writer formerly thought that maculo-anæsthetic leprosy might be due to a diminution in the virulence of the lepra bacillus; but the above mentioned explanation by Dr. Lie, a greater power of reaction in some subjects, appears more probable, and we have no evidence of the lowering of the virulence of the bacillus. This question possesses not only a medical but a biological interest, for, if it could be proved that structural changes produced by syphilis or leprosy were transmitted hereditarily, this would be an irrefutable proof of the correctness of

Darwin's opinion, that acquired characters may be transferred to the offspring by inheritance.

J. W. W. Stephens, M.D.

Semple[1] is unable to confirm Rost's statements (vide *Medical Annual*, 1905) as to the cultivation of the leprosy bacillus.

Dyer[2] believes in the curability of leprosy. He advocates: (1) **Baths** twice a day with or without soda. These are essential: (2) **Strychnine**—essential; (3) **Chaulmoogra Oil.** Begin with 3 drops, increase every second or third day till 120 to 150 drops are taken. Or administer as a pill with tragacanth and common soap: (4) Treatment must be pursued for six months, a year, or longer.

References.—[1]*Brit. Med. Jour.* Sept. 9, 1905; [2]*Med. News*, July 29, 1905.

LEUKÆMIA.

Alfred H. Carter, M.D.
J. G. Emanuel, M.D.

An enormous amount of research has been recently carried on in the field of hæmatology, but the facts elicited are so complex and technical that it is not possible, with any useful result, to analyse them in this place. Great confusion also arises from the absence of any uniform system of nomenclature, so that it is extremely difficult to compare the results of different investigators. Those who are interested in the matter could not do better than study a paper by H. Batty Shaw[1], in which all the more important investigations in disease of the blood and blood-forming organs are carefully reviewed at length. It appears that we have now reached a new phase in our conceptions of disorders apparently due to disturbance of hæmopoietic tissues and organs; and that diseases apparently presenting very different characters, such as lymphadenoma, myelomatosis, chloroma, and perhaps mycosis fungoides, should be brought into close affinity with leucocythæmia.

As to the nature of the process by which the "lymphoid" or mother-cells present in different localities proliferate, and yield cells which are either confined to the particular tissue involved—whether marrow, spleen, or lymphatic tissue (lymphadenoma or pseudo-leukæmia)—or allowed to enter the blood-stream (leucocythæmia), the opinion is gaining ground that Ehrlich's idea of the subsidiary developments being merely metatases derived from a primary marrow tumour-formation when myelocytes predominate in the blood, and from a primary lymphatic tumour-formation when lymphocytes or their allies preponderate, is inadequate, as well as being based on a wrong conception of the formative powers of myeloid, splenoid, and lymphoid tissues. It is more in accordance with clinical and experimental evidence to consider that the process is one of hyperplasia, and that the new cells are derived, whether in the marrow, spleen, or lymphatic tissues, from cells already present and normal to the various tissues named.

Etiology.—Very little advance has to be recorded in the elucidation

of the etiology of leukæmia. Two theories have been advanced: (1) The parasitic; and (2) The toxic. Arnsperger[2] collected eleven cases of myelogenous leukæmia occurring in the same region in the Enz valley, and he considers this *endemic* occurrence points to a parasitic origin of the disease. On the other hand Moorhead[3] has separated a substance from the affected lymphatic glands in leukæmia, not found in normal glands, which he thinks is a specific *toxin*. Injections of this toxin into rabbits produces marked changes in the hæmopoietic tissues.

Treatment.—Since attention was first called to the treatment of leukæmia by **X-rays,** by Pusey[4], many cases have been reported: amongst others by Bryant and Crane[5], Dock[6], Senn[7], Krone[8], Aubertin and Beaujard[9], Cappi and Smith[10], Joachim and Kurpjuweit[11], and Ledingham and McKerrow[12]. The last-named's paper gives a very good survey of the subject. Melland[13] has recently published the records of four cases treated in this way. As to technique, the application is made at intervals varying from every day to twice a week, and is kept up from ten to twenty minutes on each occasion. The vacuum tube has been usually fixed from 4 to 6 inches distant over the region of the spleen. It is obvious that every precaution should be taken to avoid "burns," and on the least suspicion of dermatitis the treatment should be suspended until the skin has recovered.

Ledingham and McKerrow, analysing the recorded cases, state that with one or two exceptions all the patients suffering from myelogenous leukæmia have experienced under X-ray treatment remarkable improvement both in objective and subjective symptoms At this stage, however, it would be quite premature to presume that the improvement will be a permanent one, as nearly all observers have been so surprised at the almost immediate effect of X-ray treatment that they have published their results forthwith. When these so-called "cured" cases and those in which marked improvement has resulted, have been under observation for some considerable time, with or without renewal of the treatment, we shall be in a better position to judge of its true value.

Acute Myelogenous Leukæmia.—Till recently myelogenous leukæmia has been looked upon as always being a *chronic* disease, and all acute leukæmias have been held to be lymphatic. Dr. Edwin Mathew[14] has collected twelve cases of acute myelogenous leukæmia, the reports of which may be taken as establishing the identity of the condition beyond doubt. These cases began more or less acutely, and ran a fatal course within from two to eight weeks. Elder and Fowler[15] give the following as the main conclusions:—

1. The course and clinical features of acute myelocytic leukæmia are practically identical with those of the much more common acute lymphatic leukæmia.

2. The anæmia is generally greater than in the ordinary chronic cases.

3. The leucocyte count is not always high; it may be little above normal, but sometimes rises to a figure comparable to what is got in chronic cases.

4. Eosinophiles may be absent or few; the same is to an even greater extent true of mast cells. As in other cases of a typical leukæmia many of the leucocytes are difficult to classify, and forms morphologically intermediate between large lymphocytes and myelocytes are common. Non-granular polynuclears are also found.

Normoblasts may be absent or plentiful and megaloblasts are sometimes present.

Mixed Cell Leukæmia.—Ehrlich separated the leukæmias into two distinct classes: (1) The myelogenous, in which the granular leucocytes (neutrophiles, eosinophiles, and mast cells) are increased in the blood, and where in addition myelocytes find their way into the circulation; and (2) The lymphatic, in which the non-granular forms (lymphocytes) are increased, the small forms predominating as a rule in the chronic and the large forms in the acute cases. Many cases of leukæmia are, however, on record which do not permit of this sharp line of demarcation, and which warrant the use of the term "mixed cell leukæmia." Browning[16] gives the differential count of such a mixed cell leukæmia, and this count may be taken as an example of the cases under consideration. The leucocytes numbered 98,300 per c.mm., and were made up as follows —

Neutrophiles	Polymorphonuclears	38	
	Myelocytes and transitionals	12·8	= 50·8
Eosinophilies (mostly mononuclear)			4·5
Large hyalines			40·7
Small hyalines			4·0

In the normal adult the seat of proliferation of the granular cells is the bone marrow, while the non-granular forms are derived from the lymphatic tissues, and while myelogenous leukæmia is due to disease of the bone marrow, lymphatic leukæmia implies disease of the lymphoid tissues. The question arises then as to whether these cases of so-called mixed cell leukæmia are due to a concomitant affection of the myeloid and lymphatic tissues similar to that which occurs in myelogenous and lymphatic leukæmias respectively. It may possibly be that in these cases of mixed cell leukæmia both the myeloid and the lymphoid tissues are simultaneously affected, but the opinion of hæmatologists tends to the view that it is unnecessary to assume a double lesion, so to speak, and that the blood picture of these mixed cases may be produced by interference with the myeloid tissue alone. The progenitor of both the granular and the non-granular white blood cell in fœtal life is a large mononuclear cell with non-granular cytoplasm (the undifferentiated leucoblast), and a reversion to the embryonic condition on the part either of myeloid or lymphoid tissue will lead to the appearance of such large mononuclear non-granular cells in the blood. Now in the leukæmias there is a tendency to a reversion to the embryonic condition on the part of the hæmopoietic organs.

and in myelogenous leucocythæmia, if many of these large mononuclear non-granular cells find their way into the blood, a blood picture of a mixed cell leukæmia is presented. These undifferentiated leucoblasts may, as in the embryo, perform the function of producing granules and thus become myelocytes. As Hutchison[17] remarks, one would expect the reversion to the non-granular form to occur with greater ease in childhood, and it is significant that very few cases of pure myelogenous leukæmia have been observed in children.

Acute Lymphatic Leukæmia.—Several cases of acute lymphatic leukæmia are now on record *which exhibit no glandular enlargement and no definite microscopical changes in the structure of the lymph glands.* Moreover, no case has yet been published in which the lymph glands alone were affected. It is difficult to reconcile these facts with Ehrlich's view that the condition is entirely independent of the bone marrow. The large mononuclear non-granular cells, mentioned above as the progenitor of the granular and non-granular white cells alike, closely resemble the so-called large lymphocyte cells, which occur in such large numbers in acute lymphatic leukæmia, and according to some observers the large lymphocytes of acute lymphatic leukæmia are really undifferentiated leucoblasts and are derived from the bone marrow. Those who take this view regard acute lymphatic leukæmia as much a disease of the bone marrow as myelogenous leukæmia is. According to Melland[18] the so-called large lymphocytes of acute lymphatic leukæmia bear no relation to the lymphocytes of normal blood, but are retrograde forms of the neutrophilic myelocyte of the bone marrow, and he recognizes their presence in mixed cell and in acute lymphatic leukæmia alike, both conditions being due to interference with the bone marrow and independent of changes in the lymphatic glands.

REFERENCES.—[1]*Pract.* Oct. 1904; [2]*Med. Rec.*; *Münch. Med. Woch.* Jan. 3 1905; [3]*Brit. Med. Jour.* Sept. 1904; [4]*Jour. Amer. Med. Assoc.* April 12, 1902; [5]*Med. Rec.* April 9, 1904; [6]*Amer. Jour. Med. Sci.* April, 1904, and Dec. 24, 1904; [7]*New York Med. Jour.* April 25, 1903, and *Med. Rec.* Aug. 22, 1903; [8]*Münch. Med. Woch.* May 24, 1904; [9]*C.R. Soc. d. Biol.* June 17, 1904; [10]*Jour. Amer. Med. Assoc.* Sept. 1904; [11]*Brit. Med. Jour.* Mar. 4, 1905; [12]*Lancet,* Jan. 14, 1905; [13]*Brit. Med. Jour.* July 1, 1905; [14]*Scot. Med. and Surg. Jour.* July, 1905; [15]*Edin. Med. Jour.* Dec. 1904; [16]*Lancet,* Aug. 19, 1905; [17]*Ibid,* May 7, 14, 21, 1904; [18]*Brit. Med. Jour.* Sept. 1904.

LICHEN.

Norman Walker, M.D.

Biringer[1] has experimented with **Atoxyl**, a white crystalline powder soluble in 20 per cent of hot water, and whose toxicity is about forty times less than any other inorganic arsenical preparation. Forty-two patients suffering from lichen ruber were treated with subcutaneous injections, and 25 to 30 injections given on alternate days sufficed to cure all the cases.

Strassmann[2] treated two cases of lichen planus by **Radium.** Three exposures of five minutes daily to 10 mgrams of radium bromide

produced inflammatory redness lasting two weeks, but without affecting the eruption. The treatment was repeated three times, and was eventually followed by the disappearance of the papules.

REFERENCES.—[1]*Jour. Mal. Cut. et de Syph.* Nov. 1904; [2]*Archiv für Derm. und Syph.* 71, page 419.

LIMP (Intermittent). *Purves Stewart, M.D.*

This condition, although originally clearly described by Charcot as long ago as 1858, under the name of "intermittent claudication," attracted but little attention until Erb, in 1898, anew discussed the syndrome under the title of "intermittirendes Hinken," or "dysbasia angiosclerotica." Since then, numerous cases have been recorded by other observers, for when its symptoms are borne in mind, it is not difficult to recognize the clinical picture. An analogous condition in horses, known as "spring-halt," has been familiar to veterinary surgeons for many years.

The condition is commoner in men than in women, and usually occurs after middle life Alcoholism, gout, syphilis, and particularly the excessive use of tobacco, are predisposing factors. Sometimes exposure to cold, in the course of the patient's occupation, appears to act as an exciting cause. The symptoms are very characteristic. At rest the patient feels no disability. But when he assumes the erect attitude, and proceeds to walk, he feels, after a longer or shorter interval, according to the severity of the case, gradually increasing pain, heaviness and fatigue in the legs, soon becoming so intense as to make him limp, and finally rendering him unable to walk owing to intolerable cramp-like pain. The patient rests, the pain and weakness pass off, only to return when he starts to walk afresh. If the feet and legs be examined during the period of temporary incapacity they are found to be cold and purple, or sometimes of a mottled red colour. And, what is most characteristic of all, the pulse in the dorsalis pedis and posterior tibial arteries (one or both), is either diminished or absent. There are no sensory changes or alterations in the reflexes, and, except during the paroxysms, the motor power of the limbs is unimpaired.

These symptoms, in all probability, are the result of a temporary anæmia of the muscles of the leg, produced by a vasomotor spasm of the arteries, usually superadded to a pre-existing arteriosclerotic narrowing of the vessels, so that, during walking, the increased blood-supply to the muscles is not forthcoming; hence the temporary muscular pain and weakness.

Post-mortem, the only constant change which has been found has been arteriosclerosis in its various forms, usually in the smaller arteries of the limb. Sometimes, as in one of Ramsay Hunt's[1] cases, skiagrams of the limb show deposits of calcareous degeneration in the posterior tibial and dorsalis pedis arteries.

TREATMENT.—**Rest** is essential and of the greatest importance, not only during the actual paroxysm (the patient himself perforce rests then), but for several weeks after an attack. The feet should be

wrapped up warmly, and not allowed to hang down. **Iodides** should be exhibited, to diminish, if possible, the arterial sclerosis, and with them **Nitrites** in the form of **Nitroglycerin** or, as in a striking case of my own, **Erythrol Tetranitrate.** Excess in alcohol, and still more so, in tobacco, should be enquired for and corrected, and the patient's general mode of life carefully regulated. In this way the paroxysms may be diminished, both in frequency and severity. If the disease be neglected, not only does the patient suffer from a chronic and painful complaint, but, if the arteriosclerosis become more intense, gangrene of the affected extremity or extremities may supervene.

The disease is closely allied to other angioneurotic complaints, such as Raynaud's disease, erythromelalgia, etc. Intermediate types are often met with.

REFERENCE.—[1]*Med. Rec.* May 27, 1905.

LIVER (Surgery of). *A. W. Mayo Robson, D.Sc., F.R.C.S.*

Acute Hepatitis.—Faure[1] discusses the surgical treatment of acute hepatitis. A marine came under the surgical care of Denis, with symptoms of severe hepatic infection, suffering from jaundice, fever, and pain in the right hypochondrium, which, together with enlargement of the liver, indicated acute or suppurative hepatitis. Median laparotomy was performed, and the liver thus exposed found to be enlarged and congested. Denis made several punctures into the swollen organ with the expectation of finding a purulent cavity, but without success. He then closed the abdominal wound, and to his surprise this exploratory operation was followed by an immediate fall of temperature, and by speedy and complete cure of the patient. Faure refers to similar instances reported by other French surgeons of the successful results of simple intrahepatic punctures practised in the course of exploratory laparotomy indicated by severe and acute infective disease of the liver. It cannot be held, he states, that the mere puncture of the inflamed organ relieves congestion to such an extent as to place it in better conditions for spontaneously overcoming its infection, or that the small quantity of blood that is discharged involves at the same time the removal of any number of infective agents. Notwithstanding our ignorance, however, of the mechanism of the action of puncture of the liver in the cases referred to, there can be no doubt, he asserts, of the beneficial results of such treatment.

[In a case diagnosed as advanced phthisis with continued high temperature, we suspected empyema. Several punctures were made into the pleural cavity without result, but the next day the temperature fell to normal, and the patient made a good recovery.—ED. *Medical Annual.*]

Injuries of the Liver.—The liver is injured with greater frequency than any other solid abdominal viscus. Among 365 cases of subcutaneous injuries of solid viscera, the liver was the seat of injury in 189, and the spleen, kidney, and pancreas combined in 176. There are several factors which make it particularly susceptible to injury,

especially in contusions of the abdomen. It lies wedged in between the ribs and vertebral column, is very heavy, very inelastic, and only slightly movable.

At the Gesellschaft der Aerzte, Schnitzler[2] presented a drayman on whom he had operated for rupture of the liver. Nine hours after being crushed by a cask of beer, the patient was brought to hospital in a very anæmic condition, the abdomen greatly distended both flanks dull on percussion, while the hepatic dullness was normal. A tear of the mesentery was diagnosed, and laparotomy decided upon as an immediate operation. On opening the abdomen a large rent in the liver presented itself, the mesentery between the stomach and liver being torn. Two litres of blood were removed. The rupture was located in the lower and posterior margin of the left lobe, in which a man's fist might be placed. As stitches in this position were almost impossible, the hæmorrhage was checked by temporizing with a weak solution of adrenalin conducted through the upper angle of the abdominal wound. The case is interesting from the sequelæ, as embolism of the left lung speedily followed the recovery from the accident. At the present time infiltration and shrinkage of the lung still exist. The morbid changes are likely to have arisen from primary embolism of the hepatic cells, from which fragments were carried along the pulmonary artery to the lung, where the destruction took place. Schnitzler thought as far as the wound of the liver was concerned it would heal itself without much trouble, but the danger lay in the styptic. He read a published case of hepatic rupture where no operation was performed, which nine months after the accident discharged in the form of a subphrenic abscess, large sequestra of liver being found in the purulent matter.

Lotheissen had another case to show the members where the tear in the liver was more superficial than either of the two cases previously described, The patient had been engaged in removing benzine when one of the casks exploded, throwing him violently to the ground on the abdomen, rupturing the liver. When received into hospital he was anæmic, abdomen tense and painful, especially over the umbilical region. Both flanks were slightly dull, and no blood in the urine. Five hours after the accident he was operated upon, and about two litres of blood taken out of the abdomen. It was then discovered that the left lobe of the liver was torn, leaving a rent that would hide a good-sized apple. A portion was hanging by a pedicle, as thick as the finger. Four stitches were applied, over which was placed a pad of iodoform gauze, while the pedicle was removed by the Paquelin to prevent hæmorrhage, and finally a tampon of gauze placed between the stomach and liver, which was ultimately removed by the upper angle of the abdominal section. The bleeding in this case was checked by the Matratzen stitches, which were first so successfully applied by Hochenegg.

The prognosis of the severer cases of wounds of the liver alone has improved of late years, especially under early operative treatment.

Many cases must necessarily, of course, be promptly fatal from shock or hæmorrhage or from associated injuries of other organs. Many others can be saved by operation, which would otherwise die from hæmorrhage or some complication. The treatment of all open injuries should be early laparotomy for the purpose of hæmostasis, thorough examination, and prevention of infection. As regards subcutaneous ruptures, the mild cases without marked symptoms of collapse or internal hæmorrhage should be treated expectantly. Cases in which there are marked collapse, or signs, local or general, of internal hæmorrhage, should be treated by early laparotomy, with suture or packing of the wounded liver. The mortality of wounds of the liver alone will in all probability diminish from year to year with the more general adoption of early laparotomy.

Abscess of the Liver in Typhoid Fever.—A. Guinard[3] calls attention to the rare occurrence of large liver abscesses in the course of typhoid fever. He gives the history of a patient who developed typhoid after eating oysters. The patient was forty-three years old, and had always been in the best of health. On October 21, 1902, he took to his bed with typhoid fever. Hæmorrhage appeared within a week. About the middle of November abdominal and præcordial pain developed, with nausea and vomiting. On the first of December, the liver was noticed to be increased in size. Three weeks later the patient had cold sweats, and the face expressed great pain. On the eighty-first day of the illness, an exploratory puncture was made. Pus was found. On the next day laparotomy was performed. With the thermo-cautery about 2 cm. of thickness of the hepatic tissue was incised, and thick pus flowed out of the wound in abundance. On the days following, the wound did well, but on the seventh day the patient began to fail rapidly and death supervened. The pus from the abscess revealed the presence of the typhoid bacillus. The writer believes that, if intervention takes place before the liver is profoundly involved, there will be a chance for the patient.

References.—[1]*Bull. de Mém. de la Soc. de Chir. de Paris,* No. 28, 1904; [2]*Med. Press,* Dec. 14, 1904; [3]*Med. Rec.* Oct. 23, 1904.

LUMBAGO.

Robt. Hutchison, M.D.

Traumatic Lumbago.—Frank Romer[1] means by this a condition in which pain and stiffness in the lumbar region are caused by injury, persisting long after the immediate and acute effect has passed away. Treatment of such cases based on the assumption that the condition is due to adhesions in the tendinous or muscular structures of the lumbar region, gives good results. The history of these cases generally tells of some definite, though frequently slight, sprain or rick of the back, necessitating, perhaps, but a few days' rest for apparent recovery. Instead, however, of perfect recovery, the pain, though rarely severe, does not disappear, and, as time goes on, becomes more persistent. Lumbar stiffness increases, and a condition arises similar to that of chronic lumbago. In the majority of these cases pain, though present

in the whole lumbar region, is especially referred to one defined spot in particular. Treatment as usually instituted, on the supposition that ordinary lumbago is the condition to be dealt with, is of little or no use in the cases referred to. On examination the lumbar muscles generally are found to be wasted, whilst on the affected side they are usually also rigid and contracted. It may be assumed that it is here that some matting of the muscles or adhesions amongst the deeper tendons exist. In making examination, one must, however, carefully exclude the possibility of the case being one of early spinal caries.

Treatment.—This, in such cases, aims at stretching the contracted muscles and rupturing the adhesions which are deemed to be present. An anæsthetic is given both for the prevention of pain and to ensure complete muscular relaxation and absolute freedom in manipulation. The patient is placed on his back, the leg on the sound side is flexed at the knee, and the thigh is flexed on the body till the knee touches the chest wall. It is then brought back to the extended position. The leg on the affected side is now put through the same movements, and comparison can be made as to the difference in resistance. Almost invariably it will be found that the leg of the affected side is not brought up with the same ease as was the other. Both legs are now brought up together, and both knees should be kept pressed against the chest for about a minute. The legs are now brought down again flat on the bed and the patient is raised to a sitting posture. The operator places one hand firmly over the affected lumbar region, whilst with the other he thrusts the patient back towards the bed. The hand in the small of the back causes the part against which it is placed to be extended. By this procedure the lumbar portion of the spinal column is put through flexion and extension as the patient is pressed forwards and backwards. As a rule little pain is experienced after the manipulation, and there is no need to enforce rest once the effects of the anæsthetic have passed off.

The after treatment is directed towards the maintenance of movement, for which purpose it is advisable to have the lumbar and gluteal muscles skilfully shampooed within six hours of the operation. In the course of a few days, **Exercises** graduated by means of pulleys and weights should be commenced, in addition to the rubbing. These serve both to restore the muscle waste and to keep the part supple. Later, swimming is the finest of all exercises for the same purpose. Cases of successful treatment in this manner are appended.

General Treatment.—In the *neuralgic* form, the following wafers, according to Capitan, are very successful :—

R	Phenacetin	gr. iv	Salophen	gr. v
	Acetanilide	gr. j	Bromide of potassium	gr. iv
	Antipyrine	gr. vj		

For one wafer; three daily.

When the patient is of a gouty family, 5 grains of **Salicylate of Lithium** might be added

In the *myalgic* forms, **Pyramidon** acts well. It must be given in somewhat large doses, from 20 to 30 grains a day. The urine will become red, and give a large deposit of urates. The patient should be watched, and the largest dose reached only progressively.

Certain patients derive considerable benefit from the association of **Antipyrine** with **Salicylate of Soda** :—

R	Antipyrine	℥j	Water	℥ij
	Salicylate of soda	℥j		

Four or five teaspoonfuls daily.

In every case of lumbago, and in addition to one or other of the above remedies, 10 grs. of **Hydrochlorate of Quinine** should be given morning and evening. The **Local Treatment** should not be neglected. A good liniment is as follows :—

R	Salicylate of methyl	℥ij	Laudanum	℥ij
	Tincture of belladonna	℥ij	Spirits of camphor	℥iv

Where the pain is clearly localized, excellent results can be obtained from subcutaneous injections of **Antipyrine** :—

R	Antipyrine	℥j	Water	℥iij
	Cocaine hydrochlor.	gr. v		

References.—[1]*Lancet*, Feb. 18, 1905 ; [2]*Med. Press* (Paris letter), Oct. 19, 1904.

LUPUS ERYTHEMATOSUS. *Norman Walker, M.D.*

In several cases Hartzell[1] has found repeated **Freezing** of the patches beneficial, and in some it has produced a cure. He combines this with internal treatment by **Quinine.** Stowers[2] showed a case of the multiple erythematous type which had greatly improved under 5 grains of quinine thrice daily. No intolerance had been evident and local treatment was very slight. Strassmann[3] cured three cases by exposure to **Radium.** Ulceration was produced, but a white scar was left.

References.—[1]*Jour. of Amer. Med. Assoc.* Dec. 31, 1904 ; [2]*Brit. Jour. of Derm.* June, 1905 ; [3]*Arch. f. Derm. und Syph.* 71, page 419.

LUPUS VULGARIS. *Norman Walker, M.D.*
F. Gardiner, M.D.

Hallopeau and Morero[1] report a case of a girl aged fourteen who for seven years had suffered from ulcerating lupus of the face which upon admission occupied the lower two-thirds of the nose, cheek, and anterior portion of the neck. The diseased areas were treated by the application of compresses wet with a solution of **Permanganate of Potash,** generally 1 to 50, sometimes 1 to 20. Under the influence of this remedy the ulcers cicatrized, as did an ulcer on the left leg. The drug in this country is chiefly used as an adjunct to light treatment.

Dreuw[2] describes a method specially suitable for general practitioners, if not too essentially German in its character. The affected parts are first well frozen with **Ethyl Chloride,** and then commercial **Hydrochloric Acid** is thoroughly rubbed into the affected part by means of a wooden stick covered with wool. The acid can be made by saturating it with free chlorine, and it has an elective action, turning the lupus nodules

a dirty white colour. General anæsthesia may be required in extreme cases or where the nasal cavity is affected. Afterwards the skin is merely protected by a dusting powder, and a dry slough forms, which drops off in two or three weeks. The operation may have to be repeated at intervals, and isolated nodules are subsequently punctured by capillary tubes filled with acid.

Microscopic examination shows that a prompt and profuse emigration of leucocytes from the local vessels into the tuberculous nodules is produced. Control observation on normal tissue does not show any such accumulation of leucocytes. We have tried the method in a few cases with distinct promise of success.

Phototherapy is now so well established that the medical journals and popular magazines are no longer so flooded with papers. Improvements in technique are still going on. It is recognized that one gets the best results in previously untreated cases, that is to say, best in the sense of absence of unsightly scarring, and where time and money are no object, if the case is yielding to phototherapeutic methods it is probably better to use them solely. There are cases that do not yield promptly to the above, and other cases where the cosmetic effect is not so important, and then a speedier result can be got by removing the excessive overgrowth by older methods of scraping, cauterization, etc.

Berlin[3], discussing light treatment, rather dictatorially states that the bactericidal view is abandoned and that the influence is one of pure cutaneous reaction. His experience is only that of eighteen months with a Lortet Genoud lamp, with which, by giving a minimum exposure of an hour, he produced satisfactory results in his clinique.

Intensification of effect by fluorescent bodies promised well, but recent reports are not so favourable. Eosin is the chief substance used, and Tappeiner[4] employs a solution of ·01 to ·1 per cent, which is painted on before exposure to the light, whose rays are filtered through a solution containing copper sulphate and picric acid. Stronger solutions of eosin are apt to cause the formation of thick, impenetrable crusts, but Picke and Asatic[5] use a 1 per cent solution and remove crusts by ointments. Sixteen cases of tuberculosis of the skin treated by the latter improved greatly, but they speak cautiously as regards cures.

Straub[6], from chemical experiments, concludes that an eosin peroxide is formed by the action of light, and that both eosin and quinine can produce active oxygen under its influence.

Forchhammer[7] tested twenty-three lupus patients by injecting a 1 in a 1000 solution of **Erythrosin** subcutaneously, and by exposing them to light 4 to 8 hours later. The experiments were unsatisfactory, considerable pain followed, and even necrosis occurred in some cases. Therapeutically the results were a failure.

(*For* SERUM TREATMENT *see under* TUBERCULOSIS OF THE SKIN)

REFERENCES.—[1]*Ann. de Derm. et de Syph.* Nov. 1904; [2]*Berl. Klin. Woch.* Nov. 21, 1904; [3]*L'Echo Médical du Nord*, May 21, 1905; [4]*Munch. Med. Woch.* May 10, 1904; [5]*Berl. Klin. Woch.* Sept. 12, 1904; [6]*Munch. Med. Woch.* June 21, 1904; [7]*Deut. Med. Woch.* Sept. 15, 1904.

MALARIA. *J. W. W. Stephens, M.D.*

St. George Gray[1] in the prophylaxis of malaria advocates 10 to 15 grains of **Quinine** on two successive days, with an interval of eight or nine days before the next two doses are taken.

Watson[2] by energetic measures of drainage, states that he has reduced markedly the amount of malaria at Klang and Port Swettenham in the Federated Malay States. The number of "sick certificates" has fallen from 236 in 1901 to 14 in 1904.

Blackwater Fever.—De Haan[3], examining microscopically the kidneys in fatal cases of this disease in Java, comes to the following conclusions as to the function of the kidneys in determining hæmoglobinuria. The kidneys are injured by the presence of hæmoglobin in the circulation, and suffer a simple degeneration of the epithelium, or even an extensive nephritis. The excretion of injurious products is interfered with, and the resulting symptoms may show themselves as a headache, or even uræmic coma or delirium. Uræmic symptoms are, however, not as a rule pronounced in blackwater fever.

Hearsey[4], in the treatment of *blackwater fever*, which he believes to be induced by quinine, advocates the following method: **Bicarbonate of Soda** 10 grains, and 30 minims of a solution of **Perchloride of Mercury**, to be given every two hours during the first day, and every three hours subsequently until the urine clears.

Vomiting is best controlled by ½ grain of **Morphine** subcutaneously.

References.—[1]*Brit. Med. Jour.* p. 1289, 1905; [2]*Ibid.* Ap. 15, 1905; [3]*A. f. Schiffs v. Trop. Hyg.* Jan. 1905; [4]*Brit. Med. Jour.* p. 1290, 1905.

MALTA FEVER. *J. W. W. Stephens, M.D.*

The *Micrococcus melitensis* is characterized by the following points: (1) It is decolorized by Gram's stain; (2) It does not ferment glucose as other streptococci that occur in the gut do; (3) It renders milk alkaline without coagulation, whereas other streptococci curdle milk; (4) It is agglutinated by a specific serum in dilutions of 1 in 1000: (5) Litmus glucose nutrose agar facilitates the isolation of the micrococcus.

The micrococcus is stated to occur in the milk of most of the Maltese goats. If this coccus is really the *M. melitensis* the bearing on the prophylaxis of the disease will no doubt be considerable.

Others hold that a mosquito is implicated, and that *Acartomyia zammittii* and Malta fever have the same distribution. This culicine breeds in salt water pools along the shore.

Reference.—*Royal Society Reports*, Harrison and Sons, London, 1905.

MARASMUS (Infantile). *G. F. Still, M.D.*

Wasting in infancy is, according to Burnet[1], most often due to improper feeding, and occurs most often in infants who for one reason or another have been weaned. Many other conditions, whether local, such as harelip or pyloric obstruction, preventing the free taking of food into the intestine, or general, such as splenic anæmia, tuberculosis or syphilis, produce a secondary marasmus. But there

is also a primary marasmus, so Burnet says, occurring most often during the first six months; this is dependent in some cases upon the inheritance of tissues which are imperfectly developed, so that proper digestion and absorption are impossible; in some cases there is a history of parental alcoholism or of neurasthenia. Premature infants are specially liable to primary atrophy; and probably infants healthy at birth may suffer from primary marasmus if living in unhygienic surroundings.

The marasmic infant, according to the same writer, is subject to many complications, of which the commonest is erythema about the buttocks and genital regions: sometimes boils or abscesses occur on other parts of the body; prolapsus ani may occur with or without diarrhœa; bronchitis and bronchopneumonia are common, and convulsions may precede a fatal ending.

The present writer[2] has suggested that in congenital syphilis marasmus, a common symptom, is of two kinds: the first and more frequent is the moderate degree of wasting which accompanies other well-marked manifestations of syphilis, just as marasmus accompanies almost any illness in infancy; the other is a progressive marasmus, which often begins before any other manifestations of syphilis have appeared, and which continues even when associated symptoms of the disease have all disappeared under the influence of mercury. This latter form of syphilitic marasmus is independent of any fault in diet or irregularity of the bowels; it occurs even in breast-fed infants, and although in some cases it responds to mercurial treatment, more often perhaps it persists, in spite of treatment, and the infant dies. In families where there is known to be syphilis in the parent, this grave form of marasmus may be suspected as due to syphilis before any other manifestations are present by the persistence of the wasting in spite of absence of the ordinary causes of marasmus. In such cases mercurial treatment should certainly be tried.

As is well known, infants lose weight during the first few days of life. Longridge[3] has collected some interesting statistics at the Queen Charlotte's Hospital, showing that by the third day there is an average loss of $6\frac{1}{4}$ to $7\frac{3}{4}$ oz. in babies of average weight at birth. In these cases the cord was not tied until it had stopped pulsating, so that these figures do not bear out Dakin's statement that with this late ligature the loss is only 2 to 3 oz., whereas with immediate ligature the loss may be as much as half a pound. The weight was regained on the ninth day. This observer considers that the loss of meconium and urine, and deficiency of maternal breast-milk, are not the only factors in determining the loss of weight. Perspiration accounts for some of it; and in confirmation of this view he points out that babies born in December lose less weight than those born in July.

In most cases of marasmus feeding is at fault; but there is some dispute as to the particular fault. Fischer[4] considers that deficient assimilation of fat, whether from excess of fat in the food, or from indigestion set up by the proteid given with it, or from deficiency

of fat in the food, is the common cause of marasmus. Southworth[5] does not regard fat as a chief factor, he considers that too strong milk mixtures, and the use of one proprietary food after another, are common causes. Stern[6] suggests that the fault lies in the chemical character of the fat of cow's milk as contrasted with that of human milk; in the former, for instance, there is much butyric acid, in the latter little, if any; in the former the emulsion is much less finer than in the latter; and investigations have shown that the fæces of an infant fed on cow's milk contain 0·8 grams of fat per diem, whereas those of one fed on human milk contain only 0·4 gram of fat; absorption, therefore, of the fat of the mother's milk is more complete than that of cow's milk. Holt[7] has recorded cases in which the use of milk mixtures containing an excessive proportion of fat, for instance 5·3 per cent and 6 per cent, resulted in gradual disturbance of digestion, so that rapid wasting occurred.

Treatment.—The marasmic infant often presents great difficulty in feeding, and it is usually necessary to use food which theoretically is far too dilute for a healthy child of the same age. Burnet (loc. cit.) considers that **Condensed Milk** is of great value in these cases as a temporary food until the powers of assimilation improve so that the infant can take fresh milk. He says that such infants can practically never assimilate fat to any appreciable extent, and therefore cod-liver oil should not be given internally, it may rather increase the disorder of digestion. He recommends, however, that the infant should be rubbed over twice a day with oil, and wrapped in cotton-wool. Stern (loc. cit.) advocates the use of **Yolk of Egg** in the treatment of marasmic infants. He says that when given in suitable amount and mixture, it is well borne and well liked by the majority of infants. The residue left by yolk-fat in the fæces is smaller than from any other animal fat; the yolk contains much lecithin, which "tends to the restoration of nerve-force"; it contains also a diastasic ferment which assists in the digestion of carbohydrates; the yolk also stimulates the digestive secretions. He considers that the white of egg is borne badly by many infants. The yolk, he says, must completely replace the milk-fat; and, therefore, is to be given in skimmed milk warmed to about 105° F.; the amount of yolk required varies from ½ to 2 teaspoonfuls. Burnet (loc. cit.) recommends **Sanatogen,** which contains 95 per cent of milk albumin and 5 per cent of sodium glycerophosphate. Half a teaspoonful of this to be mixed into a paste with water, then the remaining water of the milk mixture mixed with it, and the whole added to the milk, whatever proportion of milk is being used. La Fétra[8] reports the use of **Subcutaneous Injection of Yolk of Egg;** the most notable and natural result of which was production of abscesses. Biehler[9] has **Injected Arsenic** subcutaneously into several unfortunate infants, and finds that they gained weight.

Asses' Milk has been much used for marasmic infants, and with success by many observers, but Variot[10] reports unsatisfactory results from it, and points out that its price is prohibitive for many people;

the same objection he says, applies to the **Wet-nurse,** whose trade he considers immoral and not to be encouraged. Of the efficacy of a wet-nurse in most cases of marasmus there can be no doubt: indeed in some cases such feeding seems to offer the only hope of saving a child's life. Variot considers the most satisfactory method for the feeding of marasmic infants to be the use of **Sterilized Milk,** which he would give during the first three weeks with one-third of water: from the fourth week to the end of the second month with one-fourth water, and after that age undiluted. The milk is sterilized at a temperature of 108° C.

Edsall and Miller[11] have used **Predigested Bean-flour** as a food for marasmic infants. Powdered white kidney-beans were used. The powder (10 per cent in water) was first heated for 20 minutes, then after cooling to 65° C. it was treated with a diastatic ferment (ceres), then boiled. The resulting fluid contains but little starch, and the proteid is in easily assimilable form. This fluid was used in milk-mixtures; and the observers state that a 20 per cent solution, i.e., double the strength mentioned above, is practically equivalent to beefsteak in nutritive value. Some of the gains in weight were very striking; one infant gained 1½ pounds in three days, another 1 pound in eight days, another over 2 pounds in four days, and there were many other successes only slightly less striking. In one case that was very bad the bean-flour solution had been used alone with success, without any milk; and as the solution may contain as much as 1 per cent of proteid, it is evident that as a temporary food it is sufficient.

The value of **Buttermilk** in cases of marasmus has been emphasized by Rensburg[12]. It produced a steady rise in weight, where many other foods had failed.

References.—[1]*Pract.* Oct. 1905; [2]*Lancet,* Nov. 19, 1904; [3]*Brit. Jour. Dis. Ch.* Sept. 1905; [4]*Arch. Ped.* July, 1905, p. 539; [5]*Ibid,* p. 541; [6]*Ibid,* June, 1905, p. 431; [7]*Ibid,* Jan. 1905, p. 1; [8]*Ibid,* July, 1905, p. 542; [9]*Kronik-lekarsk,* Nov. 1904; [10]*Ann. Méd. et Chir. Inf.* Feb. 15, 1905; [11]*Amer. Jour. Med. Sci.* April, 1905; [12]*Jahrb. für Kinderh.* 1904.

MEASLES. *E. W. Goodall, M.D.*

J. D. Rolleston[1] gives a good account of the prodromal rashes met with in this disease. He observed them in 30 out of 70 cases coming under his notice. Usually the prodromal rash appears on the first day of illness, and fades before the rash peculiar to the disease comes out. In several instances the prodromal rash preceded the Koplik's spots. Six different kinds of prodromal rash were observed: isolated macules; blotchy erythema; isolated papules; urticaria; scarlatiniform rash; circinate erythema. In some cases more than one of these rashes appeared in the same individual. Most frequently the rashes come out on the trunk, but sufficiently often they are seen behind the ears, or on the limbs; rarely do they attack the face or neck.

Measles without an Eruption.—Last year we drew attention to

the difficulty that sometimes arises in making an early diagnosis of measles. The appearance of the rash usually clears up the case, but occasionally the rash is absent. Cases of this kind have recently been reported in detail by J. D. Rolleston[2], H. Balme[3], Salzer[4], and Schütz[5]. The patients have the other symptoms of measles, pyrexia, coryza, respiratory catarrh, and Koplik's spots, and even one or other of the prodromal rashes. The presence of Koplik's spots may be regarded as conclusive. In the instances recorded the cases occurred amongst others of typical measles.

Treatment.—Pitt[6] has an excellent clinical lecture on this subject from which we make the following notes. The room should be well ventilated, and kept at a temperature of 65° F. If photophobia is present the room should be darkened. A **Warm Bath**, water at 90° to 95° F., should be given every evening. Diet—simple, milk, broth, etc.; water almost ad lib. to drink. The troublesome cough is usually relieved by fruit-juice or barley water. Mouth should be washed out frequently with boracic lotion containing 2 per cent of glycerin. Brisk purges should be avoided, for fear of setting up diarrhœa.

In severe toxic cases a hot bath (100° F.) with mustard (1 oz. to every gallon of water) should be given; the mustard should be squeezed out of a gauze bag in the water till the latter is tinted with it. The child should be kept in the bath for three or four minutes. These cases will often require stimulants; in which case, if it can be obtained, fine, old sherry is the best; **Strychnine** also useful. For laryngitis the air should be moistened by a steam-kettle; hot fomentations and cold compresses, or for a strong child a leech or two may be applied to the throat. As for drugs, **Sod. Bicarb., Liq. Ammon. Acetat.**, and **Vin. Ipecac.** are the best, with a little **Tinct. Camph. Co.**; in bronchopneumonia **Tinct. Belladonnæ**, 4 ℥ every 4 hours. Poultices are only useful at beginning of attack. Insomnia is often relieved by warm baths and sponging; if not, then by 2 grain or more, according to age, doses of **Pot. Bromide** or **Chloral Hydrate**. In diarrhœa the treatment depends on the cause. When the motions are offensive and contain undigested food, dilute or peptonize the milk, and give some castor oil. The following is a useful prescription:—

R	Ol. Ricini	℥ij	Ol. amygdalæ dulcis	℥ij
	Pulv. acaciæ	℥j	Aq. cinnamomi	ad ℥iij

Fiat mist.—Two teaspoonfuls three times a day.

When the motions become free from undigested food but are still loose, then—but not before—may you give astringents; **Hæmatoxylin**, or **Tannigen**, with, in some cases, very small doses of **Opium**. In cases of severe vomiting and diarrhœa $\frac{1}{6}$ gr. of **Calomel** may be given every 3 hours for 4 doses; or a subcutaneous injection of $\frac{1}{40}$ gr. of **Morphia**. Much benefit follows in chronic cases of diarrhœa after measles by the removal of the child into the country.

References.—[1]*Brit. Med. Jour.* Feb. 4, 1905; [2]*Lancet*, Dec. 10, 1904; [3]*Pract.* Oct. 1904; [4]*Munch. Med. Woch.* Feb. 21, 1905; [5]*Ibid*, Mar. 21, 1905; [6]*Guy's Hosp. Gaz.* Oct. 7, 1905.

MEDITERRANEAN FEVER. (*See* MALTA FEVER.)

MEGALERYTHEMA EPIDEMICUM. *E. W. Goodall, M.D.*

Under this term Cheinisse describes an acute infectious disease which differs from those commonly met with amongst children. It occurs most frequently in children of four to twelve years of age, and during the spring and early summer. The incubation period is six to fourteen days. Sometimes there are slight prodromal symptoms, sore-throat and lassitude; but usually the rash is the first sign. The skin only is affected, and not the mucous membranes. The rash commences on the cheeks as bright, red, confluent patches, which disappear temporarily on pressure. There is also some swelling of the cheeks. The patches clear up first in the centre, so that after a time the rash consists of irregular red rings of erythema. The trunk is hardly affected; but on the limbs there is usually a considerable amount of eruption, chiefly on the extensor surfaces. There are few, if any, other symptoms. There is not even feverishness. [I have not seen this disease in epidemic form; but have seen solitary cases with a rash such as is described. The account as given suggests bacterial infection or toxæmia.—E. W. G.]

REFERENCES.—[1]*Sem. Méd.* No. 18, 1905; *Brit. Med. Jour.* May 20, 1905.

MENINGITIS (Epidemic Cerebrospinal). *Purves Stewart, M.D.*

Within the past year or two, various alarming epidemics of cerebrospinal meningitis have broken out, chiefly in America, and notably in New York, Baltimore, and Boston; and sporadic cases have occurred in Europe. Koplik[1] has published a valuable report of his observations in a series of 77 cases examined by him within five years. Of these, 37 examined bacteriologically were found to be associated with Weichselbaum's meningococcus intracellularis. Of the others, 35 were due to the tubercle bacillus, 2 to the influenza bacillus, and the remaining 3 were due to infection by pneumococcus, staphylococcus, and streptococcus respectively. From the study of these and of other 15 cases of the epidemic form, Koplik comes to the following conclusions: As to age, infants and young children are the most susceptible, 77 per cent of the cases being under four years of age, and 60 per cent under two years. The clinical features of meningitis are too familiar to require recapitulation here. But a special "malignant" type deserves recognition, where subcutaneous hæmorrhages occur on the face, trunk, and limbs, and the disease is fatal within twenty-four to thirty-six hours. In young infants, cerebrospinal meningitis has a sudden onset, with fever, convulsions, and vomiting. The fever is of a remittent or intermittent type, and lasts three or four weeks. Rigidity of the neck muscles occurs in the early days of the disease. Babinski's extensor plantar reflex was found in 77 per cent of the cases of tubercular meningitis, and is attributed by Koplik to degeneration of the Rolandic motor cells and pyramidal tract. [We must, however, bear in mind that in infants who have not reached the age of walking, Babinski's extensor reflex is normally present.] Kernig's sign is

difficult to elicit in young infants with meningitis, but all of them over the age of two years exhibited this phenomenon. The blood shows leucocytic changes, the number of polynuclears varying from 20,000 to 50,000 per cubic millimetre. The cerebrospinal fluid (obtained by lumbar puncture) was examined in 13 cases, 9 of which showed a leucocytosis.

Fischer[2] also gives an excellent account of the disease, corroborating in all essential points Koplik's article already referred to. He remarks that the characteristic " hydrocephalic cry " of tuberculous meningitis does not occur in epidemic meningitis. Neither the Babinski reflex nor Kernig's sign, nor the leucocytosis of the blood, should be relied upon, alone, to make the diagnosis. Examination of the cerebrospinal fluid is the essential criterion, and should never be omitted. Not only its microscopic but its bacteriological features should be carefully observed. Amongst the sequelæ, permanent nerve-deafness is remarkably frequent.

A number of valuable observations were made during the epidemic of 1904, notably by Berg[3], who from a study of 750 fatal cases, draws a number of interesting conclusions. The disease has a special predilection for infants and young children. More than three-fifths of the deaths were in children under six years of age. Adults, however, are by no means immune. It is now generally recognized that the diplococcus intracellularis of Weichselbaum is the commonest cause of the disease, though we must not forget that other organisms, such as the streptococcus and staphylococcus pyogenes, the pneumococcus, as well as the tubercle bacillus, can also produce meningitis.

The incubation period of epidemic cerebrospinal meningitis is unknown. Also the mode of spread of the contagion is not definitely proved. But it is highly probable that the diplococcus gains access to the body through the nasal passages, spreading from the posterior nares along the lymphatics to the subarachnoid space. And whilst the organism is freely diffused through the cerebrospinal meninges, brain, and cord, there is no general infection of the blood-stream, inasmuch as cultures from the blood do not contain the organism. The germ can easily be isolated from the nasal discharges ; hence it is highly probable that this is its mode of spread during epidemics. During life the meningococcus must be sought for in the cerebrospinal fluid obtained by lumbar puncture. Pathologically the lesion is a leptomeningitis, but the inflammatory process, though primarily in the membranes, does not necessarily remain confined to them, but may extend into the substance of the brain or cord, causing purulent infiltration and even abscess. It may also extend along the sheaths of the various cranial nerves, especially the optic and auditory nerves, producing severe and permanent impairment of vision and hearing.

The symptomatology is so familiar that it need not here be recapitulated in detail. We may, however, refer to the characteristic attitude of the patient. He lies on one side (not on the back), with the hips and knees flexed and the adductors spasmodically contracted. The

arms, flexed at the elbows, are brought over the front of the chest, and the head is rigidly extended in an opisthotonic attitude. This posture is maintained even during delirium and coma. There is also much trembling, as though the patient were chilly. The temperature-curve shows nothing very distinctive. Irregular remissions occur in the fever. The blood shows a well-marked polymorphonuclear leucocytosis (from 18,000 to 30,000) serving, in this respect, to differentiate the disease from enteric fever and from tuberculous meningitis. An excess of leucocytes is also present in the cerebrospinal fluid, 90 per cent of the leucocytes being of the polymorphonuclear type, and many of the leucocytes demonstrating the diplococcus within them. Kernig's well-known sign is of the utmost diagnostic value. It is best obtained by placing the patient on his back, flexing his thigh at right angles with the abdomen, and then endeavouring to extend the knee. This latter movement is found to be impossible; even though semi-comatose, the patient complains and cries out, and his hamstring muscles become tonically contracted. Kernig's sign sometimes persists for weeks after convalescence is established. It is often unequal on the two sides.

TREATMENT.—This consisted of **Baths** and **Sponging** to lower the temperature, **Calomel** and **Iodides** internally, and **Lumbar Puncture** to relieve intracranial pressure, 30 to 40 cc. as a rule being withdrawn, sometimes more, if the intracranial pressure was very excessive. Temporary relief was usually obtained, and the procedure was sometimes repeated with beneficial results.

Injections of various **Antiseptics** into the subarachnoid space (through the lumbar puncture cannula) have been tried. Thus Bettencourt and Franca in the Lisbon epidemic injected solutions of **Lysol**, and so also did Seager[4], from 9 to 12 cc. of a 1 per cent solution being injected. Berg, however, obtained equally good results from repeated **Withdrawals of Cerebrospinal Fluid** (from 15 to 30 cc. at a time, according to the degree of intra-spinal pressure). He also recommends **Sodium Iodide** every three hours, the dose varying from 5 to 10 grs. in children, to 15 or 20 grs. in adults. Together with this, he prescribes **Mercurial Inunction** to the back of the neck, **Ice-bags** to the cranium and spine, and, if the temperature rises excessively, **Warm Baths.** The ears should be examined daily in order to recognize and treat incipient otitis media, whilst the patient must be assiduously nursed to prevent the occurrence of bed sores.

REFERENCES.—[1]*Med. News*, June 4, 1904; [2]*Med. Rec.* Aug. 13, 1904; [3]*Ibid*, Sept. 10, 1904; [4]*Ther. Gaz.* Feb. 1905.

E. W. Goodall, M.D.

As a rule the onset of this disease is somewhat sudden. It may, indeed, be abruptly sudden, as in a case mentioned by N. B. Foster[1] of a man in good health who was seen to stumble and fall while walking in the street. He was found to be in a convulsion, which proved to be the first symptom of an attack of meningitis. But not infrequently, before marked symptoms arise, there is a period of a few hours, or a day or

two, during which the patient feels out of sorts, and has shifting pains in the back and limbs. But whether there be a short prodromal period or not, the first pronounced sign is intense headache, usually of the occipital and vertical regions, especially of the former. Vomiting and diarrhœa may also occur at the same time, especially in children. Occasionally shivering attacks or convulsions are met with. So long as consciousness is retained the agonizing headache keeps the patient awake and restless, and will cause children to cry and scream. This condition is soon succeeded by semi-coma and delirium. Other symptoms to be observed at this stage are photophobia, cutaneous hyperæsthesia, and retraction of the neck. With the coma the latter condition may pass on to complete opisthotonus, with rigidity of the limbs and muscles of the abdomen. Squint and facial spasm may also be present. Kernig's sign can nearly always be elicited; in it "any attempt to place the patient in a sitting posture causes the legs and thighs to fly to a flexed position, as if impelled by a strong spring" (Carlos Franca[2]). To obtain the sign in the ordinary way the patient should be lying on his back with the hip-joint semiflexed; if then an attempt is made to extend the knee-joint passively, the extension is prevented by a contraction of the hamstrings. G. G. Speer[3] states that another sign usually to be found at this stage is "a turning in of one or both feet until, if not disturbed, one lies across the other." In the early stages the knee-jerks and reflexes may be exaggerated; later they are abolished. The condition of the pupils varies very much. Optic neuritis may be present. The spastic condition of the muscles may be succeeded by paralysis; and paralysis may occur without any previous spasm. The bowels are usually confined; later in the disease there is incontinence of urine and fæces. The tongue is furred and dry, and sordes collect on the teeth, gums, and lips. Extreme thirst and frequent vomiting were noted in many of the Lisbon cases. There may be a rash of some sort. But the popular name for the disease, "spotted fever," is somewhat of a misnomer, as the occurrence of a rash is not constant, neither is its extent wide, nor its intensity severe. Its nature is variable; a petechial eruption, large ecchymoses, erythema, and herpes have all been observed. In the Lisbon epidemics of 1901 and 1902[2] a petechial eruption coming out on the face and limbs within twenty-four hours of the onset of the disease appears to have been fairly common. But in other epidemics rashes have been seldom seen. The temperature usually rises at the commencement of the disease, and may be anything from 99° F. to 104° F. During the course of the illness there is usually more or less pyrexia. In a few cases the temperature chart resembles that of typhoid fever, but usually it is more irregular. In very severe cases temperatures of over 105° are not infrequent. Foster recorded one of 109·2° just before death. In Lisbon apyrexia was noted in some severe cases. Except when the temperature is very high the pulse-rate is but slightly raised. The respiration rate varies. It may be raised out of proportion to the pulse-rate or the

temperature. The number of leucocytes in the blood is increased, especially the polymorphonuclear neutrophiles. The disease has a very high mortality, 25 to 75 per cent. In cases which recover the illness may be of two to three or four weeks' duration as regards the febrile stage; but convalescence is tedious; and there is often extreme emaciation. Complete recovery may follow most severe symptoms; but not infrequently some weakness, physical or mental, remains.

The most frequent complications are: conjunctivitis; peri- and endo-carditis; bronchitis; lobar pneumonia; arthritis; nephritis. Relapses may occur.

TREATMENT.—From the high mortality that has been recorded in different epidemics it is evident that treatment has not been altogether successful. But even if life cannot be saved in any given case, pain can and must be relieved. The patient should be kept quiet in a darkened room. Great care must be exercised in order to avoid bed-sores, which are particularly likely to form rapidly. A certain amount of restraint is necessary in delirious cases. The patient may be kept under a sheet which is pinned to the sides of the bed; and, if possible, padded side-boards should be fixed to the bed. The joints should be wrapped in cotton-wool lightly bandaged on. In most cases nerve-sedatives are called for, and of these the most efficacious are **Morphia** and **Opium**. The experience of American physicians shows that large doses of these drugs can be tolerated in this disease. Strong used to give 40 minims of laudanum every hour; and Bowden 7½ grs. of opium at the beginning, and 1 gr. every half hour. Irwin gave morphia hypodermically in doses of ¼ to ⅓ gr. at intervals of a few hours. Opium or morphia appears to be most beneficial when administered very early in the illness. As the patient becomes drowsy the dose must be diminished, or the administration stopped. In cases where there may be any objection to opium, **Potassium Bromide** or **Chloral Hydrate** may be used. Speer gives the following formula, which he states to be very useful:—

℞	Potassii bromid.	gr. cxx	Hyo cyaminæ	gr. j
	Chloralis hydrat.	gr. cxx	Elix. simplicis	q. s. ad ℥j
	Cannabis indic.	gr. j		

Of this mixture a child of three is given 10 to 15 minims every twenty minutes until profoundly under its influence, and the dose must be repeated as soon as there is either moaning or restless movement of the limbs. The dose for an adult is one-half of a teaspoonful administered in the same manner.

Most authorities agree that **Counter-Irritation to the Spine** and back of the head is a valuable measure; so that blistering or rubbing the spine with stimulating liniments, such as camphor liniment, or mustard poultices, may be employed. It is not desirable to blister deeply; frequent flying blisters are preferable. **Cold** should be applied to the head, either by means of crushed ice in a cotton or flannel cap made in two layers, or by iced water running through an aluminium

coil. In severe cases **Hot Packs** or **Baths** (water at 104° F.) for 15 or 20 minutes two or three times a day are recommended by some observers. The bowels should be kept freely open by castor oil or calomel. Stimulants are to be employed when the state of the heart requires them. In severe and prolonged convulsions **Chloroform** should be given. The *diet* is that of the febrile condition; small quantities of easily digested nourishment given frequently.

A method of treatment employed in nearly all the cases in the Lisbon epidemic was **Tapping the Spinal Canal.** In severe cases this was done daily during the first ten days; in milder cases one or two tappings were sufficient. "The patient was placed in a sitting posture, and with due antiseptic precautions the puncture was made with a needle 5 cm. in length and ¼ mm. in diameter. Though any part of the lumbar region may be chosen, the fourth interlaminar space is preferred the guide being given by the line joining the posterior inferior spines of the ilium, which cross at the level of the fifth lumbar vertebra. The needle is inserted 1 cm. outside the spinous process and slightly below, and directed inwards and slightly upwards, and the puncture is so rapid that local anæsthesia is unnecessary."[4] When the fluid drawn out is thickly purulent, it must be withdrawn by an aspirator, and a solution of lysol (1–100) injected into the spinal canal.

The place of lumbar puncture in the treatment of this disease is not yet established. But there is evidence to show that even if it does not bring about a cure it yet affords relief. **Laminectomy,** with irrigation of the spinal canal, first performed by Cushing, is still on its trial.

References.—[1]*Amer. Jour. Med. Sci.* June, 1905; [2]*Brit. Med. Jour.* July 8, 1905; [3]*Med. Rec.* April 15, 1905; [4]*Brit. Med. Jour.* July 8, 1905,

MESENTERIC EMBOLISM. *Robt. Hutchison, M.D.*

Jackson, Porter, and Quinby[1] have collected 214 cases of mesenteric embolism and thrombosis, which tends to show that this condition is not so rare as is sometimes supposed. It is pointed out that because of failure in the collateral circulation the occlusion of the mesenteric arteries causes symptoms practically identical with those incident to closure of the veins.

Etiology.—The causes of etiological moment are those which lead to the formation of thrombi, from which emboli may arise. Thus arterial disease, especially of the mesenteric arteries, takes first rank. In cases of venous thrombosis the process may be primary or secondary. All intestinal changes allowing the passing of bacteria into the vessels are predisposing factors. The secondary venous thrombosis follows cirrhosis and syphilis of the liver, pylephlebitis, and processes at the liver hilum.

Symptoms.—In the acute group, which constitutes the larger one, the disease is characterized by sudden onset of colicky, abdominal pain, followed by nausea, vomiting, often bloody, and diarrhœa, also

often bloody; or the symptoms may resemble those of intestinal obstruction of the paralytic type. The temperature falls below normal and the abdomen becomes distended. Peristalsis disappears, and death occurs in a few hours or days. In a smaller group the onset is insidious and chronic, with no abdominal symptoms. Over one-half of the cases occur between thirty and sixty years of life.

Diagnosis.—This is extremely difficult, but is based on there being present a source of the embolus, copious intestinal hæmorrhages, unexplainable by disease of the gut wall or by hindrance to the portal circulation; quick and marked fall of body temperature, colicky abdominal pains, followed by distension and free fluid. The presence of emboli in other parts is shown by the history. There occurs sometimes a large palpable blood tumour between the layers of the mesentery. The symptom-complex is rarely present in its entirety.

Prognosis.—This is very grave. There is a mortality of 94 per cent in all the reported cases. In chronic cases, attended by few exacerbations, the prognosis is moderately bad.

Treatment.—Nothing apart from operation seems to promise help, and in 47 cases operated upon there was a mortality of 92 per cent. Elliott resected forty-eight inches of gut with complete recovery. The autopsies showed 15 out of 24 non-operative cases in which less than this quantity of gut might have been resected. In 15 of these cases there is reason to believe that operation might have been effective.

The authors advise against operation followed by immediate anastomosis. They would bring the involved gut well out of the wound, with liberal sound margins left at either end. After resection they would fix the open ends in the wound, well walled off with gauze tampons. If peritonitis be present, it is combated by flushing with hot saline solution.

Reference.—[1] *Jour. of Amer. Med. Assoc.* June 4, 1904.

MOLLUSCUM CONTAGIOSUM. *Norman Walker, M.D.*

Not having come across any allusion elsewhere, we note that we have treated three cases of this disease successfully by exposure to **X-Rays.**

When the disease appears, as it so often does, in a localized crop of twenty or thirty lesions, the advantages of the method are obvious.

MORPHINISM. *Purves Stewart, M.D.*

The remarkable increase in the consumption of morphine within recent years is greater than can be accounted for by its medicinal administration. In all probability this excessive consumption of the drug is due mainly to habitual morphinism. The hypodermic syringe has rendered its administration a matter of great simplicity. Hence the importance to the physician of familiarity with the symptoms of the habit. Morphinism is especially a disease of the cultured and refined classes, the medical profession itself furnishing a large number of victims.

The symptoms of morphinism are fairly characteristic. For the first few months, as Douglas[1] remarks, no objective symptoms are noticeable. Then a peculiar pallor appears, with languor and debility in the morning. This passes off as the day goes on, and in the late evening the patient is at his best physically and mentally. The patient, if he has any complicated work to do, will begin it when others are preparing for sleep. Together with this nocturnal activity is a remarkable nocturnal appetite. The patient usually insists on having food left in his bedroom at night, and he is especially fond of sweets. This is in marked contrast to the alcoholic patient, who rarely cares for sweets. A patient who abandons alcohol for morphia may rapidly develop a fondness for confectionery, which he had formerly disliked. Most morphinists smoke cigarettes to excess, and they have a characteristic fondness for perfumery, together with a well-known carelessness as to washing themselves. Whether the perfume be to cloak the absence of cleanliness, it is difficult to say. The patient also becomes untidy in dress, and tends to lose and misplace various small belongings. Absolute and unblushing untruthfulness is another very characteristic sign. The deleterious effects of morphine depend more upon the length of time for which it has been used than upon the actual quantity consumed.

REFERENCE.—[1]*New York Med. Jour.* Aug. 13, 1904.

MOTOR APPARATUS OF THE EYE (Defects of). *A. Hugh Thompson, M.D.*

Strabismus.—In the operative treatment of strabismus, Landolt[1] has for many years upheld the advantages of advancement over tenotomy. There are, however, he says, "some rare cases of convergent strabismus of very old standing, with strong contracture (not contraction) and marked alteration of the structure of the internus muscle. A surgical operation on this muscle seems to be admissible, simultaneously with

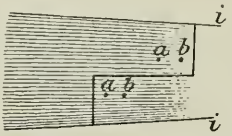

Fig. 41.
Lines of incision in muscle.
a, *b*, Points of suture.
i, Insertion of muscle.

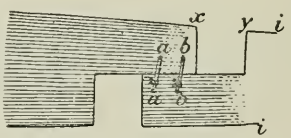

Fig. 42.
Muscle advanced and sutured.
x, *y*, Gap in muscle. The remaining letters signify the same as in *Fig.* 1.

"advancement" of the opposing muscle. Only, instead of setting back the shortened internus by a tenotomy, I propose to preserve its normal insertion on the eyeball and to lengthen it by a special procedure. The new operation consists in severing the muscle so that the divided extremities are left somewhat in the form of steps of a stair, as shown in *Fig.* 41, and lengthening it by uniting these extremities, as shown in *Fig.* 42. The operation has already given me excellent results."

PLATE XXIII.

Mycosis fungoides.

Mycosis fungoides.

Myasthenia Gravis.—This is a rare disease first described by Sir Samuel Wilks, in 1877, and subsequently known under various names, one of the most descriptive being bulbar paralysis without anatomical lesions[2]. In nearly half the cases the first symptom is slight ptosis, gradually increasing and generally more marked on one side than the other. At some period of the disease complete and persistent ophthalmoplegia externa occurs without exception, but the intrinsic muscles of the eye are never paralysed. Bulbar paralysis is usually present to a greater or less degree, and usually the patients die, after from one to three years, of dyspnœa. In the earlier stages of the disease, however, the ocular symptoms may be the only ones present, as in a case reported by Spiller and Buckman[3], so that the ophthalmic surgeon who was not acquainted with the disease might easily make a wrong diagnosis[1].

References.—[1]*Lancet*, Jan. 28, 1905; [2] *Amer. Jour. Med. Sci.*, April, 1905; [3]*Ibid.*

MUMPS. *E. W. Goodall, M.D.*

Incubation Period.—James E. Blomfield[1] relates a case in which, after a single short exposure, the incubation period was 25 days. W. T. Parker Douglas[2] mentions two cases in which it was 28 and 29 days respectively.

References.—[1]*Brit. Med. Jour.* Feb. 25, 1905; [2]*Ibid*, March 18, 1905.

MYASTHENIA GRAVIS. (*See* Motor Apparatus of the Eye.)

MYCOSIS FUNGOIDES. *Norman Walker, M.D.*

Gaucher[1] says that the best means of dispersing the tumours is the actual cautery; other caustics are not so satisfactory. He gives arseniate of soda internally, and is apparently not aware of the value of X-ray treatment. At the same lecture he demonstrated a case of melanotic sarcoma of the sole, which he proposed to treat with X-rays. At a subsequent lecture (May), it was reported that the result had been most satisfactory, the tumours flattening down and the fœtid odour disappearing after twenty applications on alternate days.

In previous *Annuals* this disease has been illustrated, and two years ago photographs were given of the first recorded case treated by X-rays, showing the condition before and after treatment. The accompanying illustrations (*Plates XXIII, XXIV*) taken from casts, show perhaps better the very satisfactory results of the rays in this disease. The case was a comparatively recent one, the patient having suffered only for a year.

The second illustration shows how completely the tumour disappeared; the pigmentation present at the time the last cast was made has since vanished.

Reference.—[1]*Jour. de Mal. Cut. et Syph.*, March, 1905.

MYOMATA. (*See* Uterus.)

MYOSITIS. (*See* Dermato-Myositis.)

NÆVUS. *Norman Walker, M.D.*

Hartigan[1] exhibited a case of port wine nævus in a woman of twenty-six, which covered the left cheek and the side of the nose: 10 mg. of **Radium Bromide** of highest activity were used, and 39 exposures, varying ½ to 1 hour, were made at intervals of one week. At the time of exhibition only a few small areas were left.

Strassmann[2] has tried 12 cases with a similar quantity of radium, and of these 8 were improved or cured by four sittings of five minutes each at intervals of two days. Microscopically he finds the first change in the blood-vessels, and later in the epithelium. One cannot doubt but that the varying experiences in this and other affections are due in great part to different strengths of radium, as also to the boldness with which it is applied.

References.—[1]*Brit. Jour. of Dermat.* Sept. 1904; [2]*Arch. f. Derm. und Syph.* lxxi. p. 419.

NASAL ACCESSORY SINUS (Diseases of). (*See also* Antrum of Highmore.) *P. Watson Williams, M.D.*

The symptoms, etc., of nasal accessory sinus disease in their relation to general diseases, ophthalmology and neurology, have been reviewed by Moritz[1], Bronner[2], Whitehead[3], and others, and may be briefly summarized as follows:—

Headache is a very frequent, but not invariable symptom of accessory sinus disease. The form of headache is not characteristic, it may be localized or general, constant or intermittent; it is generally intermittent, increased by stooping, or by alcohol or tobacco. Moritz points out that the following forms are most frequently found:—

1. *Neuralgic headaches.*—Most frequently infra-orbital or supra-dental, and then usually of a most violent character, in acute inflammation of the antrum; supra-orbital in inflammation of the frontal cavity. The pains are apt to be intermittent, alternating with the discharge from the affected cavity, and to radiate along the several branches of the fifth nerve. As the pains are frequently relieved by phenacetin or antipyrine, the disease is frequently mistaken for simple neuralgia. Hajek states that these neuralgic attacks almost always take place in the morning hours, rarely in the afternoon, never at night, and this Bronner considers distinguishes the nasal headache from that due to eyestrain, which latter is worse at night and always better after a night's rest. Whitehead differentiates headaches due to adnasal disease, and those due to deformities or diseases causing mechanical obstruction or interference with the functions of the nose, and those causing latent obstruction. In the first group the pain is usually located at the root of the nose or frontal region, less frequently the occipital and vertical regions. He rightly points out that intranasal syphilis with ulceration may cause severe pain, worse at night. Frontal headache he considers may be due to congestion or pressure of the middle turbinate against the septum.

2. *Diffuse headache* is usually of a dull character, felt in the frontal,

parietal, or occipital region, or deeply in the head. Moritz emphasizes the fact that, although affections of the frontal and sphenoidal cavities are more frequently associated with headache, those of the antrum and ethmoid cavity are not rarely unaccompanied by headaches.

3. *Hemicranic headaches* are rarely due to adnasal disease, though Grünwald mentions four typical cases of megrim due to adnasal disease.

Gastric Symptoms, Severe Depression, Loss of Memory, and Neurasthenic Symptoms, may be due to pus escaping into the stomach, or to pyæmic absorption.

Eye Symptoms.—These, according to Moritz, are mainly: (1) Epiphora from obstruction of the lachrymal duct; (2) Conjunctivitis; (3) Œdema or inflammatory swelling of the eyelids. In disease of the antrum it is usually the lower lid which is œdematous, and the upper lid in frontal sinus disease; anyhow, the œdema is usually slight. Bronner considers that in all cases of epiphora, phlyctenular ophthalmia or marginal keratitis, the nose should be examined. When phlyctenular ophthalmia recurs he finds that there is nearly always some affection of the nares, and such cases, as well as epiphora, he has frequently cured by treating the nose.

Optic Neuritis and Sudden Loss of Vision is explained in some cases by the close proximity of the sphenoid cavity and of the posterior ethmoid cells to the optic nerve. Thus one may get compression of the optic nerve in the foramen opticum, or by perineuritis, or exophthalmos through serous or purulent inflammation of the retro-bulbar tissues. The threatened affection of the optic nerve will be shown by hyperæmia or engorgement of the papilla, while Kuhnt has recorded cases of thrombosis of the vena centralis retinæ due to nasal disease. Even iritis, choroiditis, and cyclitis seem to have some connection with intra-nasal disease, as in some cases the eye trouble has only improved when associated accessory sinus disease has been successfully treated. Intermittent exophthalmos may be due to adnasal disease.

Cerebral Complications, such as meningitis, cerebral abscess and sinus thrombosis, though of relatively rare occurrence, do arise from adnasal disease, and to Dreyfuss' 50 collected cases Moritz has added 26 recorded additional cases. In most of the recorded cases perforation had taken place, and was due to syphilis or tuberculosis. Empyema of the frontal sinus is the most frequent adnasal suppurative disease causing cerebral complications.

Reflex Symptoms are guardedly referred to by Bronner, who rightly deprecates attributing all and sundry nervous phenomena to some more or less slight nasal abnormality. But he considers, very properly, that reflex symptoms are frequently due to disease or irritation of the mucous membrane of the nares, and can be cured by local treatment of the same, and by that only. He states that many cases of asthma, hay fever, vasomotor rhinitis, spasm of the glottis, catarrh of the trachea, of the bronchi, irregular heart, cardialgia, neuralgia, conjunctivitis, asthenopia, contraction of the field of vision, megrim,

epilepsy, vertigo, enuresis, hysteria, dysmenorrhœa, etc., are often of nasal origin, though, of course, not always, while many cases of asthma are of nasal origin. Bronner refers to the investigations of Fleiss on the connection between the nose and painful menstruation, showing that if cocaine be applied to the anterior part of the lower turbinate, or to the tubercle of the septum, the pain is relieved, while destruction of the mucosa over these areas may permanently render menstruation less painful. [On these results reported by Fleiss, the Editor can express no opinion.]

Treatment.—The analysis of 40 cases of frontal sinus disease operated on by W. Milligan[4] has led him to formulate conclusions of much practical value.

A diagnosis of frontal-sinus suppuration having been arrived at, and external operation having been elected, it remains to decide as to which particular operation is to be performed. The aim in all cases is the same, namely, to remove the purulent contents of the sinus and to encourage a return to a state of health in its lining mucosa or to effect a complete obliteration of the sinus itself. The means to be adopted vary according to the amount of disease present, the condition of the mucosa, and the size and capacity of the sinus.

To open the sinus a median or a supra-orbital incision is made. The median incision is chiefly useful in cases of bilateral empyema. The supra-orbital incision is the one more frequently employed, and on the whole is the one followed by the least amount of deformity. In a few exceptional cases a combination of both incisions is useful. A portion of the anterior bony wall or floor of the sinus, or of both, having been removed, and the mucosa lining the sinus having been exposed and incised, attention should be directed to whether it is granular, polypoid, or necrotic, and to the size and capacity of the sinus itself. In cases where the sinus is full of pus, but where no extensive pathological changes are found in the mucosa, Milligan's practice is to do as little as possible, to cleanse the sinus, and to secure efficient drainage. Where, however, the mucosa is the site of marked pathological degeneration, his course is determined by the size of the sinus. In a sinus where the antero-posterior diameter does not exceed $\frac{1}{2}$ in. he removes the whole anterior wall, and this irrespective of its superficial extent, with the definite intention of endeavouring to effect its complete obliteration. Under such circumstances he finds the amount of after-deformity is surprisingly little, and the after-results surprisingly good.

A most important practical consideration is the advisability or otherwise of completely closing the external wound at the time of operation. Milligan is against closure of the primary incision on account of the risks of retention of pus, septic infection of the diploë, and the frequency with which it is necessary to reopen it. No doubt complete sewing up of the original incision gives a certain *éclat* to the operation, and produces a more finished piece of work, but it is not, in his opinion, in the true interests of the patient.

Milligan, after a few unfavourable experiences of primary closure,

proceeds to sew up only the outer third, or at the most the outer half of the original incision, and brings any packing which may be used through its inner half, or inserts a fairly large drainage tube. The more open the wound is kept the better the result. This applies with equal significance to the intra-nasal opening from the sinus. Provided that a sufficient amount of the middle turbinated body has been removed, and that the infundibular passage has been efficiently enlarged, a drainage tube leading into the nose is unnecessary.

In sinuses where the antero-posterior diameter exceeds ½ in.—and this is very frequently the case—Milligan removes all mucous membrane and encourages the obliteration of the sinus by a gradual filling up with healthy granulation tissue. The process is certainly slow and tedious, but the results, provided fresh infection can be avoided, are good. To avoid reinfection of the granulating area is one, if not the greatest, practical difficulty encountered in the successful treatment of sinus suppuration. The greatest care is necessary to endeavour: (1) To clear out all infected areas of mucous membrane within the sinus; (2) To remove all infected fronto-ethmoidal and, if necessary, anterior ethmoidal cells; and (3) To keep the corresponding nasal passage clear and free from stagnant and decomposing secretion. In uncomplicated cases, where it is deemed advisable to obliterate the sinus, the idea occurred to Milligan that it might be worth while to shut off all communication with the nose by closing the infundibular passage. For this purpose he proposes to employ ivory screw nails, and with a small screw-driver to screw the nail into the passage until the lumen is completely obliterated. The frontal sinus then becomes a bony cavity communicating with the air only through the original supra-orbital incision. Subsequent treatment consists in keeping it lightly packed and in encouraging the formation of healthy granulation tissue. In this way the sinus is ultimately obliterated by a bed of healthy cicatricial tissue.

References.—[1]*Brit. Med. Jour.* Jan. 28, 1905; [2]*Ibid*; [3]*Ibid*; [4]*Ibid.*

NEPHRITIS. (*See also* Albuminuria.)

Prof. J. Rose Bradford, D.Sc., M.D.

Koevesi and Schultz[1] consider that the main point in the treatment of inflammatory diseases of the kidney is to prevent as far as possible the retention of nitrogenous extractives, of salts and of water. They regard the retention of salts and water as the cause and not the result of renal anasarca, that is to say, they accept the view that the retention of chlorides is an effective agent in producing dropsy. Increase in dropsy is apparently always accompanied by the retention of sodium chloride, and, thanks to this water, is also retained in the tissues, unless eliminated by the kidneys and lungs. Many other observers have shown that an increase in the amount of chlorides in the diet of patients suffering from renal dropsy is liable to be followed by considerable increase in the dropsy. In some instances it is advisable to test the rate of excretion of chlorides by the administration of

common salt. Fluids in large amount are prone to bring about a condition of hydraemic plethora, and this may not only tend to increase the dropsy, but may also aggravate the condition of cardiac dilatation and throw a strain on the circulation which the heart, especially in acute cases, is unable to meet.

These authors consider that diaphoresis should only be used in cases where dropsy is well marked or where anuria is present. Purgation is more efficacious in the treatment of both these conditions than diaphoresis, and diuretics are necessarily not as efficient in renal disease as in conditions where the dropsy is dependent on circulatory disturbance.

There are certain forms of acute nephritis in which bleeding is such a characteristic clinical feature that such cases have been described as acute hæmorrhagic nephritis. In some of these cases dropsy is present, but in others the renal lesion only reveals itself by the changes in the urine. The amount of blood present is frequently large, the urine being uniformly tinted with a bright red colour. Such cases are often very refractory to treatment, and especially to measures directed to arresting the hæmorrhage. Baccelli, influenced by the fact that the inferior vena cava and the renal veins are not provided with valves, has made the suggestion that the renal congestion may be treated by bleeding from the dorsal vein of the foot, and he states that several cases of hæmorrhagic nephritis have been greatly benefited by such venesection. A free venesection will materially relieve the tension in the vessels of the kidney, and it is at any rate probable that the important degenerative changes of the renal structures occurring in nephritis are in part at any rate associated with the mere engorgement of the renal circulation. Venesection may be used for a number of different purposes in the treatment of renal disease. Thus toxic conditions like uræmia are greatly benefited, especially in acute cases by venesection. The headache and cardiac distress and sleeplessness associated with high tension may also be relieved in a similar manner, and according to Baccelli bleeding from the dorsal vein of the foot may be used as a more efficacious remedy than leeching or cupping in the loins for the purpose of relieving congestion and increased tension in the renal vessels.

There is still a good deal of difference of opinion with reference to the part played by chlorides in renal disease. There are many who regard the retention of chlorides as the most important factor in the production of renal dropsy, but in addition to this, the rate of excretion of chlorides is used by many observers as a measure of the functional activity of the kidney, and it is stated that in many patients a pre-œdematous stage may exist where the excretion of chlorides is distinctly less than normal. In such patients the occurrence of dropsy can be brought about by increasing the amount of salt in the food. According to Widal the occurrence of dropsy may be detected by weighing the patient daily before there is a sufficient amount for it to be detected by the eye. In other words, a rapid increase in the body weight as

shown by daily observance is dependent on the retention of water, and valuable clinical information as to the patient's condition may be obtained by accurate observations on the weight.

A great deal of the difference of opinion with reference to the part played by the retention of chlorides in nephritis has arisen from the fact that this retention is not present to an equal degree in all forms. Speaking broadly, the retention is much more frequently present in cases of parenchymatous or tubal nephritis than in other forms of renal disease, and in fact in interstitial nephritis the quantity of chloride excretion may frequently be increased. It would seem, however, to Mohr, that in uræmia the excretion of chlorides is still further reduced. In interstitial nephritis the increased excretion of chlorides may reach a very high degree, and the administration of salt to these patients is not only followed by the excretion of the ingested salt, but by a further increase in the chloride excretion. According to Teissier and Courmont, many of these cases are comparable to cases of diabetes insipidus, where, as is well known, there is a marked excretion of nitrogen and phosphates. These authors look upon the polyuria, the thirst, and the absence of œdema which are such marked features of interstitial nephritis, as not only due to the plus excretion of chlorides, but as also of serious diagnostic import.

The rate of excretion of chlorides may be taken as an indication of the dietetic treatment of chronic nephritis, and where the elimination of chlorides is carried out, as it is in health, it is probable that no special dietetic restrictions are necessary. Where, however, this function of the kidney is compromised, restriction of the diet, to a greater or less extent, is advisable.

Most writers are now agreed that it is not useful to treat all cases of chronic nephritis on the old-fashioned rigid plan of pure milk diet. Such a diet is not only liable to cause digestive disturbance, but it is one on which the nutrition of an adult cannot be maintained for any length of time; and it would certainly seem that it may give rise, owing to the large amount of fluid taken, to a condition of hydræmic plethora, which may be harmful from at least two points of view—one as tending to increase anasarca if present, the other as favouring the development of high tension and cardiac dilatation. A rigid milk diet is no doubt useful in those cases of chronic nephritis, where the excretory function of the kidney is seriously affected, and where uræmic manifestations are present. In the ordinary cases of chronic nephritis, where often the main sign of disease is the presence of marked albuminuria, it is neither necessary nor to the advantage of the patient to restrict him to a milk diet for lengthened periods; and such cases often do much better on a general mixed diet, provided the quantities of meat taken are not unduly large, and that all the food is of the freshest quality and properly cooked. All highly seasoned, spiced, and tainted articles of diet are prejudicial, and often very dangerous in renal diseases. Meat extracts and broths are not only of very little value, but are also probably directly harmful in most cases of chronic renal disease.

Another important point in the treatment of chronic renal disease is the quantity of fluid that these patients should be allowed to take. At one time the advice was given that large quantities of water should be taken as a diuretic, for the purpose of flushing out the kidney and washing away the débris with which the tubules are often choked. In cases unaccompanied by dropsy this advice is probably good, but, as F. C. Shattuck has pointed out, this water very often cannot be excreted, and leads to a notable increase in blood pressure, and really aggravates rather than relieves the patient's condition. Shattuck is also in agreement with other authors in restricting the food to the greatest possible extent in cases of acute nephritis, where it may be desirable to practically starve the patient for several days.

In acute exacerbations of chronic nephritis the same general principles must be followed, but actual starvation is not possible in such patients, as they are necessarily not in such good condition as regards their general nutrition as in those cases where acute nephritis has occurred in the healthy.

In the treatment of chronic nephritis the presence or absence of dropsy is one of the most important points, and treatment is much too often directed solely with reference to the albuminuria.

Shattuck emphasizes the importance of the necessity of a varied diet, and considers that in chronic cases meat may be given once a day, and that there is no special advantage in ordering white as distinguished from red meat. The quantity of fluid given should be regulated by the effect on the urine, and if there is no tendency to a deficient excretion of water the amount ingested should be diminished.

The use of **Kidney Extracts** in the treatment of renal diseases and of uræmia has made but little progress. There is still the greatest possible difference of opinion as to the benefits arising from this treatment. The experimental results that have been gradually accumulated tend on the whole rather to show that the injection of renal extracts does not prolong life, and may shorten it after double nephrectomy in animals. On the other hand the injection of large quantities of **Saline Solutions** may prolong life.

Teissier and also Renaud still consider, however, that renal extracts are useful in the treatment of uræmia. These authors have used glycerin extract of the kidney, and also the serum obtained from the renal vein of goats. Teissier considers that the latter is beneficial not only in cases of uræmia arising in the course of chronic nephritis, but also in cases of scarlatinal nephritis. Renaud has treated a number of cases with the extract obtained by macerating fresh pig's kidneys. The extract so prepared is very nauseous, but has apparently been beneficial in some instances.

REFERENCE.—[1]*Berlin. Klin. Woch.*, June, 1905.

NEURALGIA. *Purves Stewart, M.D.*

Encouraging results have been obtained in the relief of neuralgic pains by non-medicinal agents. Amongst these, the use of **Radium** and of **Thorium** has been specially studied by de Courmelles[1]. The

relief of pain so produced appears to be due to paralysis of the sensory nerves, whereby by repeated applications a profound degree of sedation may be obtained. The pain of trigeminal neuralgia, or even of cancer, has been treated successfully by local applications of **Radium Chloride**, for a quarter of an hour three or four times a day. The risk of dermatitis is diminished if **Thorium** be employed as well. Thorium is a " poor relation " of radium, possessed of no phosphorescence, and of only two or three times the radio-activity of uranium. In trigeminal neuralgia de Courmelles applies **Oxide of Thorium**, either in a sort of varnish, or better, wrapped as a powder in a piece of tinfoil. If this be reinforced by radium, the action of the latter is concentrated on the tinfoil wrapper of the thorium, which itself contributes its own power. Besides being free from danger, thorium has the advantage of being cheap. De Courmelles records three cases of chronic trigeminal neuralgia cured in from 3 to 8 days by the simultaneous use of radium and thorium. In two of the cases stretching and division of the nerve had been employed in vain.

High-frequency Currents have also afforded satisfactory results in certain cases of obstinate pain. Somerville[2] records a number of observations, chiefly in cases of sciatic neuralgia, in some of which from five to eight applications were sufficient to remove a pain which had lasted for many months.

References.—[1]*Progrès Méd.* May 28, 1904; *New York Med. Jour.* July 16, 1904; [2]*Med. Electrol. and Radiol.* May, 1904.

NOSE (Diseases of). (*See also* Nasal Accessory Sinus.)

P. Watson Williams, M.D.

Neoplasms.—Glioma of the nose, though rare, is one of the possibilities that must always be borne in mind when new growths arise in the nasal passages in children. Two congenital cases are recorded by Payson Clark[1]. 'The first was that of a boy, aged two years with a round tumour about the size of a robin's egg centrally situated in the nose about one-third of the distance from the tip to the root of the nose. The left nostril was almost completely obstructed by a pinkish grey-polypoid growth It was found, on histological examination of a removed fragment, to be composed of neuroglia tissue by J. H. Wright. It was subsequently removed, and had not recurred after six months. The second case was observed in a boy aged ten weeks, a pinkish po ypoid mass in the left vestibule causing obstruction, likewise found by J. H. Wright to be a glioma. It was removed and had not recurred twenty months later. In both cases the tumour seems to have been benign. After a thorough search of medical literature, Clark could find no other reported cases.

Nasal Deformities and Paraffin Injections.—Very successful results have been obtained by Downie[2] in the treatment of external deformities of the nose by injection of hard paraffin. He recommends a mixture of hard and soft paraffin in such proportions as to give a paraffin with a melting point of 106 ° F., and it is sterilized by heat, which he prefers

to the harder paraffin with a melting point of 136° F., as used by Echstein, as it is more difficult to work with, and on account of the higher temperature required for melting it may be positively dangerous by causing destruction of the tissues by scalding, or by causing sloughs, etc. He refers to a case of Pfannenstiel's which, with a paraffin melting at 113° F. injection for incontinence of urine following hysterectomy, was followed by pulmonary embolism. The paraffin should be melted by immersion in a water-bath at 150 to 160° F., and the syringe previously warmed by a spirit lamp is charged and the air expelled. By ingeniously devising a needle wound with a fine coil of insulated platinum wire, which carries an electric current, Downie has overcome the difficulty of the paraffin tending to solidify in the lumen of the needle. Without any preliminary incision the fluid paraffin is then slowly injected, care being taken during the injection to have the root and sides of the nose firmly compressed by the fingers of an assistant to prevent the escape of the molten paraffin beyond the confines of the nose. As soon as the paraffin enters the tissues it should be moulded by the surgeon's fingers, and when sufficient is injected the injection is stopped. Before the needle is withdrawn a fine stream of cold sterilized water is poured over the surface to hasten the setting of the paraffin and to lessen the chance of any escaping through the puncture opening. When the needle is withdrawn the opening is closed with celloidin. Downie rarely uses a general anæsthetic, and he advises positively against a local anæsthetic, as it introduces a possible source of local trouble afterwards. Downie has had only one indifferent result; in every case there has been improvement, in many the improvement was most gratifying. He has had no case of migration of paraffin, and the good results have been permanent, and he can speak with an experience of more than 100 cases. Migration is the result of too much paraffin introduced under too great pressure.

Transillumination of the Nose.—Dr. Brown Kelly's coloured illustration (*Plate XXV*), showing transillumination of the accessory sinuses of the nose, contrasts the effect obtained in maxillary antra and frontal sinuses under normal conditions and in purulent sinusitis. The descriptions given at the end of this article sufficiently explain the appearances produced by transillumination, but we will cite Kelly's remarks on certain points of importance in connection with antral transillumination.

Conditions that may influence Transillumination. Extra-Antral Conditions.—Experience has shown that the antrum is transillumined best in spare, thin-boned, fair persons, whose palate is not more highly arched than normal and whose nasal fossæ are free and roomy. These conditions are best fulfilled in thin, anæmic women with a broad type of face.

Conversely, stout, large-boned, dark men, those with a high V-shaped palate, or with narrow and obstructed nasal passages, usually transillumine badly.

Transillumination of the pupil may be prevented by purulent ulcer

A

B

C

D

Dr. Brown Kelly's method for transillumination of the Accessory Sinuses of the Nose.

of the cornea, dulness of the lens or vitreous, or closure of the pupil (Ziem). Burger thinks that the difference in transillumination of the eye may be due in a large proportion of cases to the condition of the pigment layer of the choroid.

Intranasal Conditions.—These may be either of an anatomical or pathological nature. The anatomical peculiarities which may cause the signs to be partially or totally obscured are the small size of the cavity and the presence of bony partitions. Pathological conditions, either by giving rise to the accumulation of morbid products within the antrum or by causing changes in the lining membrane, may affect transillumination favourably or unfavourably. (*a*) Conditions increasing the brilliancy: (1) Cysts with clear contents causing thinning and distension of the antral walls; (*b*) Conditions diminishing the brilliancy: (1) Collections of pus, mucus, blood, etc., which may be of intra- or extra-antral origin; (2) Inflammatory thickening of the lining membrane; (3) Tumours which may originate within the cavity or invade it from without.

Figures prove that transillumination is a valuable diagnostic test in antral suppuration. In 77 cases the presence of disease is distinctly indicated, and in other 5 cases, although less marked, the evidence is sufficient to arouse suspicion. In four instances transillumination pointed to bilateral disease, whereas pus was found only in one antrum, probably the lining membrane of the empty antrum was thickened in consequence of previous disease.

In one case transillumination misled. All the signs of a healthy antrum were obtained on both sides, while in reality bilateral suppuration was going on. The very small amount of pus in the cavities, and the unusually favourable conditions for transillumination presented by the patient (an emaciated lady) accounted for the miscarriage of the test.

Fallacies.—In practising transillumination a fallacy may arise in one of three ways:—

1. Transillumination may be equally brilliant on both sides, and yet one antrum may contain pus. In such a case, the amount of pus in the cavity is usually very scanty, and the lining membrane is little or not at all changed. These conditions are sometimes found when the pus is of dental or extra-antral origin. This fallacy will more readily occur if too strong a light is used.

2. Transillumination may be bright on one side and darker or absent on the other, and yet on the non-illumined side the antrum may contain no pus. The unilateral darkness may be due to the following conditions: (1) Abnormal thickness of the bony walls of the antrum and small size of the cavity (asymmetry); (2) Thickening of the antral lining membrane in consequence of previous disease; (3) Solid tumour in the antrum; (4) More or less obstruction of the corresponding nasal fossa. On the other hand, the antrum that transillumines well may, as shown under 1, contain pus.

3. Both antra may transillumine badly or not at all, and yet they

may contain no pus. The bilateral darkness is usually due to the light being too weak, or to conditions outside the antrum influencing transillumination unfavourably—for example, thick bones, high palate, and obstructed nasal cavities.

Assistance in Prognosis.—Kelly mentions the assistance that transillumination occasionally gives in forming a prognosis. Thus, if an antrum that was previously dark, after its purulent contents have been washed out, transillumines almost as well as the opposite normal antrum, the suppuration is more likely to yield to treatment than if it remained dark.

It is evident from what has been stated, that transillumination is not an infallible diagnostic test. Not infrequently it suggests antral disease when none exists; on the other hand, if suppuration be going on in the antrum its presence is almost invariably indicated. On this account, and because of its easy application and the absence of discomfort to the patient, transillumination deserves to be used as a routine procedure in chronic affections of the nose accompanied by purulent or mucopurulent discharge.

EXPLANATION OF PLATE XXV.

Fig. A.—Usual appearance when both antra are normal. The crescentic taches and pupils are bright, the infraorbital taches are less so.

Fig. B.—On the right side transillumination is normal, the crescentic tache and pupil being bright, and the lachrymal tache specially so. On the left side the lachrymal tache is present, although the antrum has been packed with gauze. The nasal taches are also shown.

Fig. C.—Normal transillumination of right antrum by retromaxillary method. The crescentic, infraorbital, and lachrymal taches and the pupil, are bright.

Fig. D.—On the right side no transillumination of antrum, owing to purulent contents. On the left side transillumination is normal; the infraorbital tache is specially bright, and is not demarcated from the crescentic.

REFERENCES.—[1]*Amer. Jour. Med. Sci.* May, 1905; [2]*Brit. Med. Jour.* Nov. 5, 1904.

ŒSOPHAGUS (Foreign Bodies in). *Priestley Leech, M.D., F.R.C.S.*

Starck and Reizenstein[1] recommend the use of the **Œsophagoscope.** The examination may be facilitated by the preliminary use of the X-ray, and the soft stomach tube. Extraction through the œsophagus. is preferable, but if this is impossible œsophagotomy or gastrotomy. Franck[2] had an old man who had swallowed a large lump of meat which stuck in his gullet. All attempts at removal failed, and finally Franck gave him a **Seidlitz Powder,** the two parts to be taken separately, and the patient directed to retain the gas by holding the mouth and nostrils shut, with the idea of distending the œsophagus with gas. After a few minutes a feeling of relief was experienced, and the mass had been driven into the stomach by the pneumatic pressure.

Rolleston and Whipham[3] give notes on the case of a child who died apparently from tuberculous peritonitis. The necropsy showed that the œsophagus contained a long black pin, resembling a hat pin, of which two and a half inches of the pointed end projected upwards

through a small hole in the wall of the gullet, just above the level of the diaphragm, and the other end had perforated the upper wall of the superior mesenteric artery, and a false aneurism was formed between the pancreas and the duodenum. The pin had been in the œsophagus over two months.

Another case [4] is reported where two half-pennies, which had been in the œsophagus twenty-three days, were extracted with a coin-catcher.

Dr. Blair Bell [5] recommends the internal administration of **Cotton Wool** in cases where foreign bodies have been swallowed. He reports two cases treated successfully by this method. The cotton wool is teased out, and given in articles of food, e.g., bread and milk, or jam sandwiches. The wool may act in two ways, either by directly enveloping the foreign body itself, or by matting the fæces together round it. I. J. Johnson, of Dublin, successfully treated a similar case by the same method, some two years ago. There is some danger of forming a mass or ball of wool in the stomach.

Littlewood [5] had four cases where a tooth-plate was impacted in the œsophagus; three were removed by means of a coin-catcher under anæsthesia, but the other had to be removed by external œsophagotomy. In this case the skiagram showed the tooth-plate to be at the level of the fifth dorsal spine, and it had ulcerated through the œsophagus into a bronchus. The wound in the œsophagus was sutured, and the external wound drained. The man recovered, but still expectorates some pus.

REFERENCES.—[1]*Med. Rec.* Mar. 25, 1904; [2]*Ibid*; [3]*Lancet*, Feb. 11, 1905; [4]*Ibid*, Dec. 10, 1904; [5]*Ibid*, Aug. 12, 1905.

ŒSOPHAGUS (Stricture of). *Priestley Leech, M.D., F.R.C.S.*

Wadesack [1] details the case of a fibrous stricture of the œsophagus, in a girl seventeen years of age, after an attempted suicide by drinking hydrochloric acid. No food could be swallowed, and the patient had to be fed rectally. The sound passed for 25 cm. and then met with a firm resistance. She refused operation, but tolerated the trials of passing the sounds, and finally the smallest Crawcour's sound was passed, and thus the patient was able to swallow milk; she gained weight, and then Senator's "swelling" sound was used; this consists of a wire style inserted into a soft sound and carrying a laminaria tent; for safety's sake the laminaria tent has a thread attached to it. By persevering, the stricture was so dilated that large sounds could be passed, and in two months the patient had increased in weight from 41·5 kilos to 71·5 kilos.

Roberto Alessandri [2] writes of divulsion in œsophageal strictures by means of a new instrument. The instrument resembles the divulsor urethrotome of Otis; a whalebone filiform bougie is first passed, and then the divulsor is passed over the filiform bougie and the stricture ruptured by separating the blades. The case he tried it on was one in a man forty-two years old; it was thought to be due to ulcer of the œsophagus, similar to those occurring in the stomach, as there was no other apparent cause, and there was also present pyloric stenosis, for

which the patient had previously had posterior gastro-enterostomy done. The use of the instrument led to dilatation of the stricture.

Whipham and Fagge[3] report a case of congenital stenosis of the lower end of the œsophagus, in a child four and a half years old. The child had vomited immediately after food for at least three and a half years. No hæmatemesis, no cerebral lesion, and the bowels acted regularly. A diagnosis of œsophageal pouch was first made, but by means of the X-rays and œsophageal bougies it was seen that the smaller ones passed into the stomach, and the larger ones were arrested. The stricture was dilated under chloroform by bougies, but on recovering from the anæsthetic, emphysema of the neck, which spread all over, was noticed, showing the œsophageal wall had been penetrated. The child died, and at the necropsy the stricture proved to be of fibrous nature, half an inch in length, and one and one-third inches above the cardiac end of the œsophagus. Congenital malformations of the œsophagus are rarely met with, but briefly speaking, Whipham and Fagge say they may be divided into :—

1. Congenital absence of the whole œsophagus ; very rare.

2. Bifurcation of the œsophagus with junction of the two parts towards the lower end ; only one case recorded.

3. Congenital atresia, in which the œsophagus is divided into two parts—the least rare of all the varieties. As a rule in these cases the upper end, which is continuous with the pharynx, ends blindly in a more or less expanded cul-de-sac, while the lower opens above into the trachea or one of the bronchi, and below in a normal manner into the stomach. More rarely there is no opening of the lower part into the air passages, the two blind ends being merely joined by a fibrous cord. In connection with the upper cul-de-sac pressure pouches are sometimes formed.

4. Pressure pouches, which occur in the median line posteriorly, are thought by some to be of congenital origin.

5. Stricture caused by a fold of mucous membrane projecting into the lumen of the tube like a diaphragm, either (*a*) at the upper part of the œsophagus, immediately below the pharynx, or (*b*) near the lower end. The symptoms of such lesions are not as a rule manifested till the patient has reached middle or advanced life.

6. Stenosis of the lower end of the œsophagus, like the present one reported. The authors have only been able to find six analogous cases recorded in literature.

Plummer[4] reports a case of stricture of the œsophagus, in a young man seventeen years of age. It followed typhoid fever, and was so tight that it was impossible to pass bougies through it either by the mouth or by a gastrostomy opening. It was finally relieved by **Swallowing a Thread,** which came out of the gastrostomy opening ; a stronger thread was attached to this, and finally a small drainage tube was drawn through, and then a bougie was passed.

References.—[1]*Berl. klin. Woch.* Dec. 5, 1904, *Brit. Med. Jour.* June 17, 1905 ; [2]*Ann. Surg.* Dec. 1904 ; [3]*Lancet,* Jan. 7, 1905 ; [4]*Ann. Surg.* July, 1905.

OMENTUM. *A. W. Mayo Robson, D.Sc., F.R.C.S.*

Volvulus of the Omentum.—Stewart[1] has collected nine cases of volvulus of the omentum, seven of which were males and two females, their ages ranging from thirty-three to seventy-nine years. The omentum was connected with a hernia in five of the seven cases in which hernia was present. The symptoms were acute in all and pointed to some serious intraperitoneal lesion. The diagnosis was not made in any case; two were diagnosed as strangulated hernia, four appendicitis, one irreducible hernia, one intraperitoneal abscess, and one suppurating or ovarian cyst. The tumour could be palpated in five; in four no tumour could be felt. There seems to be no way by which a diagnosis may be reached. A moveable, doughy tumour coming on quickly after attempts to reduce a hernia is suggestive of omental torsion. A count of leucocytes may contribute in differentiating from abscess. In all of the cases the importance of immediate operation was recognized. The amount of the omentum involved varied from a portion the size of a large fig to the entire omentum, forming a mass the size of a man's head. The tip of the omental mass was fixed in six cases, thus forming two supports between which the omentum might turn. The cause of torsion was the forcible attempt to reduce hernia in four cases, coughing in one, and unknown in four.

In those cases of hernia in which there have been symptoms of strangulation, and in which only a strand of omentum is found in the sac at the time of operation, Weiner insists on a thorough investigation of the intra-abdominal portion of the omentum for torsion. These cases furnish additional proof that strenuous efforts to reduce hernia are exceedingly hazardous.

C. L. Scudder[2] has since reported a case not associated with hernia, and a case of my own published in the Transactions of the Clinical Society of London for 1895 is also omitted, the case having been operated on by me on March 1, 1892.

Primary Carcinoma of the Omentum, with Peritonitis Carcinomatosa.—While it is not unusual to find the omentum involved in malignant disease, either by contiguity or metastases from adjacent or remote organs, it is rare to find it the site of a primary malignant growth. The case reported by Arnold Sturmdorf[3] of the successful removal of a primary carcinoma of the omentum is therefore of great interest. Such primary peritoneal cancers have been the subject of much investigation and controversy, and there still exists much confusion in terminology, as well as in fundamental conceptions, as to histogenesis and development.

References.—[1]*Jour. Amer. Med. Assoc.* March 19, 1904; [2]*Ann. Surg.* Dec. 1904; [3]*Amer. Jour. Med. Sci.* April, 1905.

OPHTHALMIA (Sympathetic). (*See* Iris and Ciliary Body.)

OPTIC NERVE (Diseases of). *A. Hugh Thompson, M.D.*

Quinine Amblyopia.—About a hundred cases of amblyopia due to quinine poisoning are on record. The sudden onset of binocular blindness, associated with marked thinning of the retinal arteries and accompanied

by tinnitus aurium and deafness, in a patient who has been taking quinine in large quantities, makes a clinical picture which is quite pathognomonic, says Matthewson [1], who has followed up the history of most of the recorded cases. Of them he finds that in thirty-eight the vision subsequently became normal or nearly so, in twenty-one it was permanently impaired to a moderate degree, and in only four cases was the impairment very serious. The cause of the primary shrinking of the retinal vessels, whether it be a direct action of the quinine on the vessel walls, or a remote and indirect one, is at present unknown. With regard to treatment, McGillivray [2] says that during the acute stage of the disease good results have been got from the inhalation of **Nitrite of Amyl,** and the internal administration of **Digitalis. Strychnine** is undoubtedly of service, and galvanism is recommended.

Tobacco Amblyopia.—According to Harman [3], the visual fields in *tobacco amblyopia* are not exactly what they have hitherto always been supposed to be. Instead of a full peripheral field for white, he finds that if the illumination of the room when the test is made be diminished to about one-third that of ordinary daylight, whereas the field continues full in the case of a normal individual, the subject of tobacco amblyopia shows a very marked concentric contraction. Further, if the test be made in ordinary daylight, but if the size of the test object be reduced from a white square of 20 mm. to one of only 5 mm., whereas in the case of the normal individual the field remains the same, in the subject of tobacco amblyopia it is reduced in the same way as when tested in a dim light. These observations seem at first sight inconsistent with the common observation that these patients see better in a dim light ; but according to Harman it is their central visual apparatus that is easily fatigued in a bright light, and which may recover some of its function in the dark. If confirmed, these observations go to support the theory now in the ascendant that tobacco amblyopia is really an affection of the retina, only secondarily of the optic nerve.

Wray [4] finds that the ordinary treatment of tobacco amblyopia by strychnine and potassium iodide is unsatisfactory in that it not infrequently requires as much as twelve weeks to recover normal vision after the cessation of smoking. He therefore endeavours actively to promote the elimination of nicotine from the system by means of **Copious Draughts of Water,** in which nicotine is freely soluble. His patients are directed to dress warmly and drink one pint of water at 7 a.m., and then to walk briskly in the open air for half an hour ; then to drink a second pint and go for a similar walk before breakfast. In the middle of the morning they are to drink a third pint, and in the middle of the afternoon a fourth. By such means he hopes to promote the elimination of the poison by the kidneys, the skin, and the breath, and he finds that the patients who follow his directions recover their sight far more rapidly than those treated in the old way.

Optic Neuritis.—At the Oxford meeting of the British Medical Association, Mr. Gunn opened a discussion on "Retro-ocular neuritis."[5] The symptoms, he said, are chiefly subjective—rapid failure of vision,

particularly affecting the macular area, often in one eye only, usually accompanied by pain and tenderness in the orbit. Other characters are: Impaired pupil reaction to light, an absence of early ophthalmoscopic changes, and a tendency to recovery. In the early stages the diagnosis may be difficult between this and central retinal affections, in which, however, there is an absence of associated pain, the presence of macular œdema with round, pale, yellow spots, and a history of recent exposure to excessive light, with sometimes micropsia or a positive central scotoma. From functional amblyopia, retro-ocular neuritis is best distinguished by the impaired pupillary reaction. The etiology is varied and often very obscure. Excluding toxic cases he had collected 350 cases. "In one class he included inflammation communicated to the nerve from neighbouring structures. Cellulitis or periostitis in the orbit accounted for 40 cases; exposure to cold for 27; inflammation secondary to dental abscesses for 17; and sphenoidal sinus disease for 18. In a second class he put local manifestations of general disease; syphilitic disease (gumma), 16; and insular sclerosis, a large group of 51 cases. A third class included neuritic cases of toxic origin, chief among which ranked influenza, with 27 cases; next gout, 22; and blood dsorders, malaria, constipation, ptomaine poisoning, mental or traumatic shock, etc., 68; whilst in no less than 55 cases the causation was obscure." In the discussion that followed, both Berry and Nettleship laid stress on the importance of an alteration in the light-difference sense as an aid to early diagnosis.

Paton and Risien Russell[6] speak of the beneficial effect on the sight of the operation of **Trephining** in cases of optic neuritis due to cerebral tumour. The effect is attributed to the relief of pressure consequent on the opening made in the dura mater. Out of 30 cases in which it was possible to examine the eye conditions, subsequently to operation, Paton found that good vision had been saved in 22. In half of these (11 cases) the visual acuity had been markedly reduced at the time of operation, in some cases amounting only to bare perception of light; and subsequently improvement occurred, even in some cases, up to normal vision. The amount of swelling at the disc varied from 3 to 7 dioptres at the time of operation, but in those cases where vision was recovered, and which were seen at times varying between eight months and two years after operation, it was practically impossible to tell from the ophthalmoscopic appearances that there ever had been an attack of optic neuritis.

References.—[1]*Montr. Med. Jour.* Jan. 1905; [2]*Scot. Med. and Surg. Jour.*, 1904, p. 451; [3]*Lancet*, Sept. 17, 1904; [4]*Ibid*, Feb. 18, 1905; [5]*Brit. Med. Jour.* Mar. 6, 1905; [6]*Lancet*, Aug. 6, 1904, *Ophth. Rev.* Oct. 1905; [7]*Lancet*, June 17, 1905.

OPTIC NEURITIS. (*See* Optic Nerve.)

ORCHITIS (Fibrous). *Priestley Leech, M.D., F.R.C.S.*

Lesser[1] says several surgeons have doubted whether this condition is always due to syphilis, and in order to elucidate this question he has used the statistics of the Moabit Hospital in Berlin. In 94 cases out

of 133, there were definite signs of constitutional syphilis, i.e., 70·6 per cent; in other 20 cases there were doubtful signs of constitutional syphilis. In ordinary cases in the post-mortem room in adults only 9·6 per cent have anatomical signs of syphilis, against 70 per cent of cases where there is fibrous orchitis. In only exceptional cases is it caused by gonorrhœa.

REFERENCE.—[1]*Münch. Med. Woch.* Mar. 22, 1904.

OVARY (Disease of). *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*
Victor Bonney, M.S., M.D., B.Sc., F.R.C.S,

During the last year or so much attention has been directed to the physiology and pathology of the ovary.

Stevens[1] has carefully examined sections obtained from a large number of ovaries removed post-mortem from children in the pre-menstrual epoch, with a view to ascertaining the fate in them of the Graafian follicle and ovum. He finds before menstruation is established that although the Graafian follicle and ovum develop on the usual lines up to a certain point, retrogressive changes then appear, resulting in the destruction of the essential cells and their replacement by fibrous tissue. Consequently no corpus luteum is formed. Seeing that the only obvious difference between the ovary of the adult and child is the possession of a corpus luteum, the importance of this structure becomes strongly suggested.

Russell Andrews[2], in a critical review, sets forth the evidence accumulated as to the presence and site of production of an internal secretion in the ovary. That an internal secretion is produced is undoubted, and experimental work carried out by Fränkel points to the corpus luteum as the site of its production. As has just been noted, the development of the sexual characteristics is coincident with the appearance of the corpus luteum. Further, it is shown that destruction of this body causes the next menstrual period to be missed. If the corpus luteum be destroyed in early pregnancy, abortion is likely, whilst the loss of it soon after impregnation prevents pregnancy occurring at all. In short, Fränkel regards the corpus luteum as a monthly gland having an internal secretion, which controls the nutrition of the uterus, is responsible for the menstrual function, and in some way modifies the nature of the endometrium so that the ovum may successfully engraft itself on it.

In consequence of this work, various preparations containing the constituents of **Corpora Lutea** have been administered to women suffering from menopausal disorders in lieu of the ovarian extracts formerly employed. The effects of the latter have not been encouraging, little or no improvement resulting in the majority of cases. Evidence as to the effect of the more modern therapy is not conclusive yet, but those results that have been published tend to the thought that more is to be hoped for in this direction.

The Result of Abnormalities of the Corpus Luteum.—If the foregoing views be correct, it follows that diseased conditions of the corpus

luteum might well be associated with abnormalities of the uterus, or the products of gestation. There is some evidence that this is so. Runge, Marchand, and others have noted the frequency of cystic degeneration of the corpora lutea with hydatidiform mole and chorion epithelioma ("deciduoma malignum"). The subject has lately been investigated by Lockyer[3], but conclusive facts are not yet forthcoming, since several authors deny the invariable occurrence of luteum changes in the ovary in these conditions, whilst others state that the changes observed are not peculiar to them, being present in normal pregnancy as well.

Malignant Ovarian Cysts.—A good deal of attention has been paid to malignancy in ovarian cystotomata. Cerné[4] has stated that at least one-fourth of these cases are malignant. Lejars[5] believed 15 per cent were malignant. Pozzi disagreed with such an estimate, and stated that a large proportion of the papilliferous ovarian cysts were benign in nature, or at the most tended only to local recurrence. Victor Bonney[7] has investigated the karyokinetic changes occurring in this type of neoplasm, and finds that certain of them exhibit heterotype and homotype mitosis, as has lately been proved to occur in malignant growth elsewhere.

Cullingworth[8] makes a very strong plea for early exploration in suspected cases of malignant disease of the ovary. He says that we have no absolute criteria, either clinical or microscopical, by which we can recognize the character of these growths with certainty. He enforces his arguments with a number of cases which have come under his personal observation, who have been cured of the malignant or semi-malignant growth after not one but repeated operations. These lectures prove most encouraging reading, epitomizing as they do the experience of a life's work in gynæcological practice. They teach us not to despair in cases apparently almost hopeless, and urge us, in the author's words, "to attack such growths again and again, making up our minds not to be beaten as long as there is one spark of reasonable hope." Such teaching is strictly in accord with the modern treatment of malignant diseases in other sites, and deserves to be taken to heart.

The whole subject of malignancy and ovarian tumours is at present in an unsettled state. Theoretically, any ovarian tumour may become malignant. Certainly those tumours containing large numbers of new epithelial cells should be looked on askance. Secondary local dissemination has been recorded in connection with almost every kind of ovarian tumour, not excepting teratomata and dermoids. It is for this reason that Bland-Sutton advocates the removal of ovarian cysts *en masse*, without previous tapping, whenever feasible. Similar views are held by certain other gynæcological surgeons.

References.—[1]*Brit. Gyn. Jour.* Jan. 1904; [2]*Ibid*, May, 1904; [3]*Ibid*, Jan.-Feb. 1905; [4]*Annal. Gyn. et d'Obst.* July, 1904; [5]*Ibid*; [6]*Ibid*, and *Rev. Gyn. et de Chir. Abd.* May-June, 1904; [7]*Trans. Path. Soc.* 1904, and *Arch. Midd. Hosp.* 1904; [8]*Ingleby Lectures, Univ. Birm.* and *Brit. Jour. Obst. and Gyn.* June, 1904.

PANI-GHAO. (*See* SKIN DISEASES, TROPICAL.)

PANCREAS (Surgery of). *A. W. Mayo Robson, D.Sc., F.R.C.S.*

Pancreatic Cysts and their Treatment.—The surgery of cystic disease of the pancreas is distinctly in advance of its pathology and much ahead of the surgery of the pancreas as a whole. Although cysts of the pancreas cannot be said to be common, they have to be taken into account in the diagnosis of any cystic tumour in the abdomen; for, as will be seen later, they may appear in various regions and may simulate many other diseases. A search through literature reveals the fact that, excluding my own twelve cases, 160 cases of operation for pancreatic cysts have been recorded. It will thus be seen that cystic disease of the pancreas cannot be spoken of as common.

Seeing that simple drainage is usually sufficient to bring about relief or cure of the disease, surgery offers a poor opportunity for pathological intervention, since experience has shown that the patient's interests are best considered by a limitation of the incision to a size sufficient to empty and drain the cyst, and not sufficiently large to satisfy pathological investigation; hence it is highly probable that many reported cases of operation for pancreatic cysts have been for cysts of other organs, and it is an undoubted fact that quite a number of the cysts supposed to originate from the pancreas are pseudo-cysts.

Cysts of the pancreas may be divided into false and true. The false or pseudo-cysts may be due to a distension of the lesser peritoneal sac, or to a localized collection of fluid in the neighbourhood of the pancreas, both of which forms I have operated on. True cysts may be due to retention from various causes, to parasitic disease, to new growths, as in proliferation cysts, and to hæmorrhage.

For practical purposes we may put aside several rare forms of cystic disease, seeing that the greater number of chronic cases that come under the care of the surgeon are due to retention of the gland secretion, the outflow of which is hindered in some way. Senn found that ligature of the pancreatic duct did not result in the formation of a cyst, though chronic or intermittent obstruction might result in cyst-formation; just as ligature of a ureter or acute obstruction leads to atrophy of the kidney, though chronic obstruction or an obstruction of an intermittent character tends to the development of hydro-nephrosis.

The outflow of secretion in the pancreas may be hindered in different ways by obstruction of the excretory duct or by a combination of compression from without and obstruction from within. The most frequent cause is probably chronic interstitial pancreatitis in which compression and constriction of the ducts result from the development and contraction of connective tissue, thus leading to stagnation of the secretion. Wirsung's duct may be closed by gradual compression, as, for instance, in the development of a tumour along its course or by the gradual development of a duodenal tumour which compresses the orifice of the duct. Pressure by swollen lymphatic glands, or by

adhesions near the head of the pancreas, or even by a gall-stone pressing on Wirsung's duct, may lead to stagnation of secretion and thus to cystic development.

I have seen a cyst of the pancreas to result from chronic pancreatitis due to ulceration extending into the pancreas from a chronic ulcer of the posterior wall of the stomach. The case was treated successfully by gastro-enterostomy and at the same time drainage of the cyst. Large cysts may also be caused by obstruction within the duct, as, for instance, by a pancreatic calculus or by a gall-stone in the ampulla of Vater. Doubtless some cysts are altogether independent of obstruction, and cannot be accounted for by any of these explanations.

Symptoms.—The symptoms produced by a pancreatic cyst vary according to the cause, as well as from the size and the seat of the tumour. They are at first dependent on the disease which leads to the cystic formation,

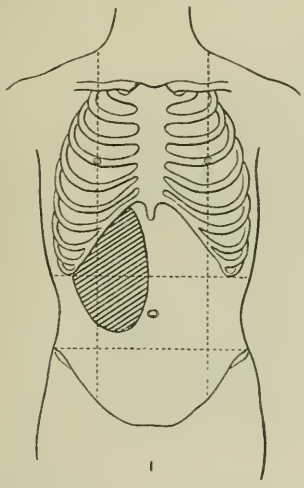

Fig. 43—Pseudo-cyst of pancreas, formed around necrosed pancreas in a man æt. 58 years. Patient in good health two years later.

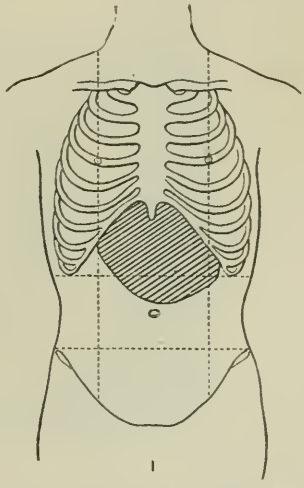

Fig. 44—Traumatic pancreatic effusion into the lesser peritoneal sac, in a boy æt. 2 years knocked down by a cab.

though later the pressure exercised by the tumour itself on the neighbouring viscera has to be taken into account. Seeing that cystic disease is generally associated with some interstitial pancreatitis, either local or general, we may expect to find digestive disturbance with loss of flesh and pain at the pit of the stomach quite early in the disease, preceding by some time the recognition of the cyst at the surface. If the cause be dependent on some obstruction in the duct, we may expect to find paroxysmal pains accompanied by vomiting and followed by jaundice and wasting.

If the interstitial pancreatitis is at all extensive, there will be marked loss of flesh, associated with fatty stools, azotorrhœa, and bulky, pale motions, and rarely the presence of glucose in the urine. In all the

cases of pancreatic cyst that I have recently observed there has been a well-marked pancreatic reaction in the urine, indicating catarrh of the pancreatic ducts, or interstitial inflammation ; and if this holds good for cystic disease of the pancreas generally, as I believe it will, I think it will form an important diagnostic sign in any case of tumour suspected to be pancreatic.

The Röntgen rays may also form a useful help in diagnosis in certain cases, as they may establish the presence or absence of pancreatic calculi, which, as I shall hope to show, are quite opaque to the X-rays.

I have seen some cases of pancreatic cyst quite devoid of symptoms, and where the patient has simply sought advice because of the swelling. On the other hand, I have also seen the tumour associated with severe pain and distress, and with marked digestive and metabolic symptoms.

The physical signs of cyst of the pancreas can be best illustrated by diagrams (*Figs.* 43 to 52). *Fig.* 45 illustrates the importance of the

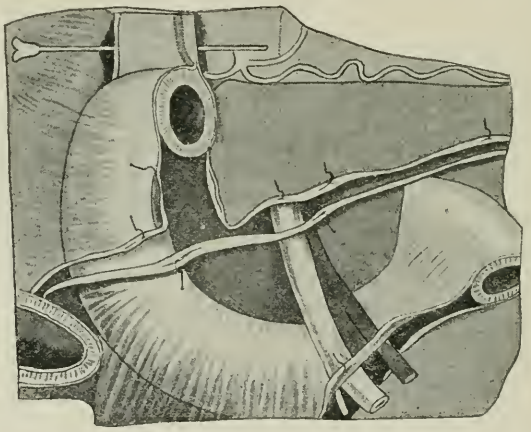

Fig. 45—Diagram to show the relations of the peritoneal reflections of the pancreas.

peritoneal reflections from the pancreas on to the viscera, and by means of this diagram I think I can show how these reflections influence the ultimate position and relationship of the cysts.

The physical signs of cysts of the pancreas are by no means constant ; and the diagrams of cases that have been under my care, will demonstrate how utterly unlike in position, in size, and in physical signs the various tumours were, though in all the later cases metabolic and digestive symptoms enabled a diagnosis to be made.

For instance, a tumour springing from the anterior surface of the head or body of the pancreas above the transverse mesocolon will project into the omental bursa, and if small will bulge the stomach forward, or if large will either reach the surface above the stomach, between it and the liver, or, pressing forward below the stomach, it will bulge between it and the transverse mesocolon. On the state of

distension of the stomach will depend the extent of contact of the tumour with the abdominal wall. By distending the stomach with air through a tube or by giving doses of soda and tartaric acid in

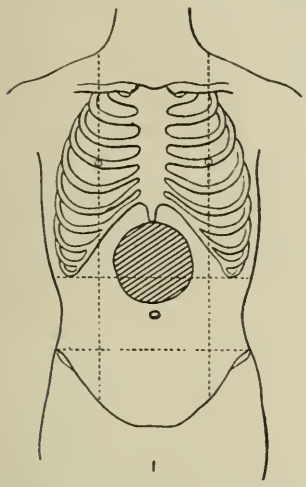

Fig. 46—Cyst of pancreas treated by incision and drainage; man æt. 35 years; well seven years later.

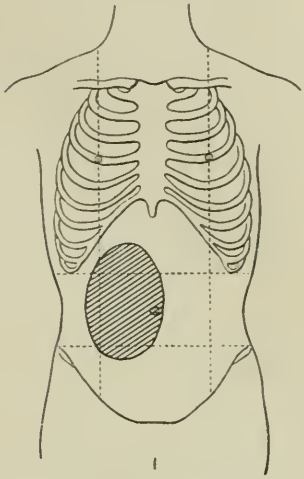

Fig. 47—Cyst of pancreas treated by drainage; man æt. 53 years; short fistula: remains otherwise well.

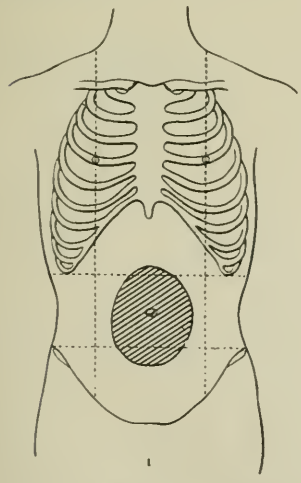

Fig. 48—Cyst of body of pancreas: drainage; recovery.

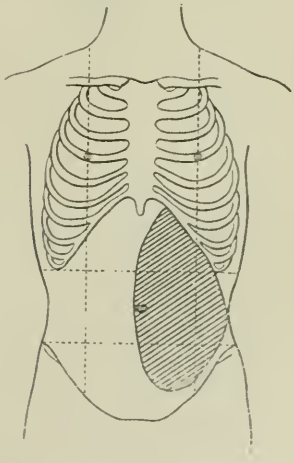

Fig. 49—Cyst of pancreas from man æt. 37 years; drainage; recovery.

separate draughts the relation of the stomach to the cyst can be readily shown. If a cystic tumour arise from the pancreas to the right of the omental bursal reflection, it may make its way forward to the

right hypochrondrium and simulate a gall-bladder or right renal or supra-renal cyst. Should a cyst arise from the posterior part of the head or tail of the gland, it may project either into the right or left lumbar region and resemble a cyst of the kidney. If a tumour springs from the head of the pancreas below the reflection of the transverse mesocolon but to the right of the mesenteric vessels, it will reach the surface below the hepatic flexure of the colon on the right side and may simulate a right renal tumour or a tumour of the cæcum or ascending colon, as the mesentery will prevent it passing to the left of the spine ; but should it arise from the small portion of the processus uncinatus on the left of the mesenteric vessels, but below the attachment of the transverse mesocolon, it may burrow between the layers of the mesentery and simulate a mesenteric cyst, or it may bulge on the left of the mesentery and reach the surface below the transverse

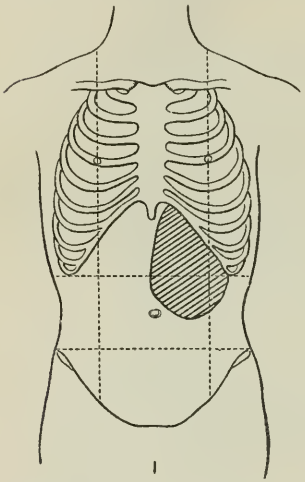

Fig. 50—Cyst of tail of pancreas treated by incision and drainage; cure.

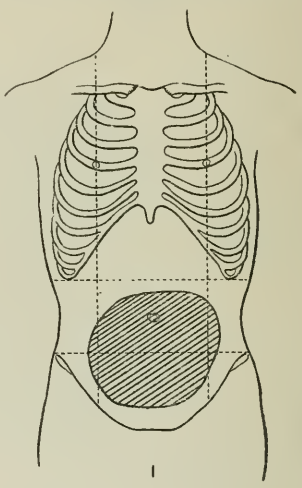

Fig. 51—Pancreatic cyst resembling ovarian tumour.

colon on the left of the spine, when it may resemble a left renal or ovarian cyst or a tumour of the descending colon or small intestine. A tumour arising from the body or tail of the pancreas above the reflection of the transverse mesocolon will pass upwards beneath the left costal margin and resemble a cyst of the spleen or of the left lobe of the liver. I have seen a pancreatic cyst in this region opened and drained under the idea that it was a cyst of the spleen, and I have seen a chronic abscess of the spleen opened and drained under the idea that it was a cyst of the pancreas.

Tumours springing from the pancreas on the left of the duodeno-jejunal junction, where the lower surface of the gland lies on the transverse mesocolon, have a tendency to press the great omentum forward and to project above the transverse colon, but they may

grow downward toward the central region of the abdomen and arch the transverse colon or even project below it so that the colon, lies above the tumour. The relationship of the colon to the cyst may be ascertained by distending the colon with air introduced *per anum*.

In an interesting case recorded by Dr. Sidney P. Phillips a thin-walled pancreatic cyst springing from the head of the pancreas completely filled the abdomen and presented the physical signs of ascites. The explanation of these variations, which may, and often do, lead to difficulties in diagnosis, is an anatomical one and depends on the site of origin of the cyst, which in making its way to the surface proceeds in the line of least resistance, and is thus influenced by the reflections of the peritoneum and the arrangement of the viscera overlying the gland.

Diagnosis.—A cyst of the pancreas may thus simulate a dilated and tense gall-bladder, a cyst of the liver, spleen, or kidney, an omental or mesenteric cyst, an ovarian or uterine cyst, a cystic dilatation of the bile-duct, a supra-renal cyst, a tubercular peritonitis, or even an ascites. It is evident therefore that the presence of a cystic tumour alone, even in a characteristic position, will not justify the diagnosis of cyst of the pancreas, though as a rule the combination of symptoms, together with the physical signs, should leave little doubt in the majority of cases as to the nature of a tumour, even before an exploration of the abdomen is done. It used to be a favourite diagnostic method to explore by a hollow needle any cystic tumour: but it can be under only very exceptional circumstances that this aid to diagnosis would be justifiable, as it is by no means devoid of danger from perforation of an overlying viscus, e.g., stomach, colon, etc., or perforation of a large vessel or extravasation of the cyst contents. Not only so, but the examination of the contents will not always make the diagnosis certain. If, however, such an exploration be decided on, it is better to employ a small aspirator needle and at the same time to completely empty the cyst, which, if tense, would otherwise be liable to leak into the peritoneal cavity and produce disastrous consequences. While it is easy to say what will be the physical signs on percussion and palpation of a cyst appearing above, behind, or below the stomach, or above, behind, or below the transverse colon, it will be seen that no one description can in any way guide the student as to the regular signs to be found in a pancreatic cyst reaching the surface.

The shape of a cyst varies according to the way in which it originates from Wirsung's duct or from the smaller canals within the gland. Thus there may be a rosary-like dilatation of the whole duct, as in a photograph taken from a specimen in the College of Surgeons' Museum. Virchow termed this "ranula pancreatica," from its analogy to the well-known cystic tumour in the mouth.

If several small ducts are constricted, the resulting cysts may be small and multiple, especially if associated with diffuse chronic pancreatitis. In case of partial cystic dilatation of Wirsung's duct, large cysts may form which may be oval or rounded, and may vary from the size of a fist to enormous sacs containing as much as twenty

to thirty pints of fluid, though the ordinary size of pancreatic cysts is something between that of an orange and a child's head

The thickness of the cyst wall will vary according to the amount of pancreatic tissue entering into its structure, but in some cases it may be quite thin. It should not be forgotten that large blood vessels may be encountered in the walls of the cyst. The lining of the cyst is generally smooth, but in some cases it may be roughened and show ridges and septa, the remains of original cysts ; or there may be found adherent to the inner surface of the cyst clotted remains of profuse hæmorrhages. The contents of a cyst may resemble water, and may give the appearance of a hydronephrosis having been tapped, or the fluid may be thick and slimy. More frequently, however, the contents of the cyst are light brown or coffee-ground in colour. The fluid may also be syrup-like and gelatinous, or colloid or purulent. In one of my early cases it was yellowish-green, as if mixed with bile. It will thus be seen that the naked-eye appearances of the contents of the cysts do not always form a guide as to its nature, though a chemical analysis of the fluid often affords positive assistance, especially when, as occasionally happens, all the three albumen-digesting, fat-emulsifying, and starch-converting ferments of the pancreatic juice are present.

It is, however, possible to find all the ferments absent and yet the cyst may be pancreatic, or to find one or other of the ferments only present : moreover the ferments may be present in pseudo-cysts.

The termination of pancreatic cysts in the absence of treatment varies in different cases. There is usually a steady progress of the disease that has caused the cystic condition—as, for instance, in the case of interstitial pancreatitis towards atrophy and its consequence, diabetes ; but pressure symptoms may produce danger before this slower termination, or the cyst may rupture into the peritoneal cavity and cause death by shock or by peritonitis.

Rupture into the stomach or intestine has also been known to occur. In some cases pancreatic cysts have existed for many years without producing any serious symptoms, though this is exceptional.

Treatment.—It is quite clear that medical treatment can be of no avail in the case of pancreatic cysts, and that surgical treatment alone is available for relief or cure.

Aspiration and other forms of tapping are inadequate and ineffectual methods, which are attended with more danger than is the operation of incision and drainage. They are, therefore, not to be recommended even for diagnostic purposes. Occasionally complete extirpation of the cyst may be performed, as in one of the cases under my care, where the tumour returned a few months after it had been apparently successfully treated by drainage ; but the greater difficulty in performing excision, its impracticability in certain cases, and the greater mortality attending it, as compared with the operation of incision and drainage, make it quite clear that drainage should always have a fair trial unless the circumstances prove to be very exceptional, as, for instance, in the case of a cyst of the tail of the pancreas, or in the case of a pedunculated cyst.

As to the situation for drainage, that will depend on circumstances. The tumour will usually be attacked most readily from the front at a point where it very nearly reaches the surface. Occasionally, however, as in one of my cases, it may be drained from the loin.

The following is a description of the operation usually performed: An incision is made through the parietes opposite the most prominent part of the cyst. When the peritoneum is opened, the finger can be employed to ascertain the relations of the cyst and its attachments. If the stomach is in front of the cyst, it will be better to displace that viscus upwards and to make a slit through the great omentum in order to expose the cyst wall; if the colon is in front, it may be displaced downwards. But no rule can be formulated, as the cyst must be reached in the most convenient way, and that can only be ascertained when the abdomen is open. By means of an aspirator the fluid is then drawn off and an opening made in the cyst sufficiently large to allow of a drainage tube being inserted. The tube may then be fixed to the margin of the incision in the cyst by a single catgut suture, and if the opening into the cyst is surrounded by a purse-string suture which can be tightened round the tube, all fear of leakage from the cyst into the peritoneal cavity is avoided. Any vessels coursing over the cyst must be avoided, but should an artery or vein be pricked it must be caught between pressure forceps and surrounded by a ligature.

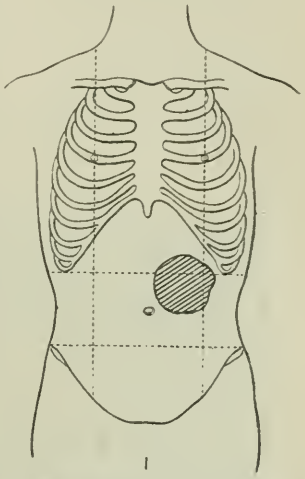

Fig. 32.—Cyst of tail of pancreas from woman æt. 38 years; drainage; recovery. Recurrence; excision of cyst; recovery.

The edge of the cyst may then be fixed to the aponeurosis by three or four sutures, but it is better not to attach it to the skin. The abdomen is then closed, and if the tube is sufficiently long it will readily drain into a bottle containing some antiseptic fluid. If, on exploration, the cyst is found to have a narrow attachment to the pancreas and the adhesions are not too extensive, it may possibly be shelled out or the pedicle may be ligatured, but this is rarely feasible.

Some surgeons have suggested the desirability of fixing the cyst to the surface and only opening it after a few days when adhesions have formed, but this operation *a deux temps* seems to be quite unnecessary.

PARALYSIS AGITANS.

Purves Stewart, M.D.

The treatment of this distressing malady has hitherto been so unsatisfactory that one feels justified in trying any new remedy which offers a reasonable prospect of alleviating the tremors. Until lately, the drug which clinicians have found to be most beneficial has been

Hyoscyamine, given in doses of from $\frac{1}{120}$ to $\frac{1}{60}$ of a grain. In certain cases hyoscyamine controls the tremors to a remarkable extent, whilst in others it signally fails. Clément[1], in a recent note, claims to have obtained good results in two cases of paralysis agitans by the administration of **Formic Acid.** He gave 4 grams of the normal solution of formic acid in each dose. The results were rapid and remarkable. Within two days the tremors, which had been present for ten and eighteen years respectively, became so much modified that the patients were able to use the hand for lifting a glass of fluid to the mouth, a feat which had previously been impossible. The improvement continued day by day, although the tremors did not entirely disappear. If further experience corroborates M. Clément's observations, we may here have a remedy of considerable value.

REFERENCES.—[1]*C.R. Acad. des Sci. Paris,* 1905, No. 18, p. 1198, *Lancet,* Sept. 23, 1905.

PARALYSIS (Ischæmic). *Purves Stewart, M.D.*

Sometimes, during the application of splints to the upper limb in cases of fractures or other injuries of the forearm, the bandages are applied too tightly, and the muscles have their blood-supply interfered with by

Fig. 53.

pressure. As a result, the patient has swelling and pain in the hand, and if the pressure be not relaxed, he then develops a characteristic contracture of the flexors of the fingers and hand. The muscles swell

at first from effusion ; later they become shrunken and extremely hard. Active movements are lost, and even passive movements are painful and difficult. The hardness and stiffness of the muscles, and the absence of electrical "reactions of degeneration," with the absence of anæsthesia, usually suffice, with the history of the case, to distinguish the condition from a neuritis. *Fig.* 53, from a case of Campbell Thompson's[1], shows very typically the deformity in this affection. Under treatment with **Massage** and **Electricity** such cases usually recover completely.

Reference.—[1]*Polycl.* June, 1905.

PARALYSIS (Landry's). (*See* Bladder.)

PARALYSIS (Post-Diphtheritic). *Purves Stewart, M.D.*

For some time past it has been a generally accepted view that the paralyses following diphtheria are referable to a neuritis, produced by the diphtheritic toxin. It is, however, a question of some interest as to why there is sometimes such a remarkable localization of the paralysis, corresponding to the site of the inoculation (e.g., paralysis of the palate after pharyngeal diphtheria), whilst in other instances far-off palsies appear, e.g., of the eyes, the diaphragm, or the limbs. In this connection Babonneix[1] has performed a series of interesting experiments on dogs and rabbits, from which he concludes that in some cases the toxin, diffused through the blood-stream, attacks the motor peripheral nerves or even the anterior cornua themselves, causing a generalized paralysis, whilst in other cases local injection of an attenuated toxin simply produces a paralysis of the corresponding limb. This would signify an ascending march of the toxin along the peripheral nerves. Bearing in mind this double mode of infection of the peripheral nerves, we should therefore do everything in our power not only to attack the diphtheritic bacilli by **Local Antiseptics,** but also to neutralize by **Antitoxin** the effects of the diphtheritic toxin in the blood-stream.

Reference.—[1]*Presse Méd.* June 4, 1904.

PATELLA (Dislocations of). *Priestley Leech, M.D., F.R.C.S.*

Cheesman[1] records a case of dislocation of the patella with rotation on its horizontal axis. This injury is not very common, but the author gives a record of other cases which have been published ; five in all. In only one case was reduction accomplished by manipulation alone ; in the others it was necessary to open the joint in order to free the patella. Midelfart and Deaderick speak of it as a downward dislocation. (See also Fractures.)

Reference.—[1]*Ann. Surg.* Jan. 1905.

PELLAGRA. (*See* Skin Diseases, Tropical.)

PEMPHIGUS. *Norman Walker, M.D.*

Saundby[1] reports an acute case affecting skin and throat, which had lasted eleven days before admission, and was accompanied by severe headache. Three weeks previously the patient cut his finger while at

his work as a butcher, and ten days later bullæ appeared and rapidly spread. On admission the temperature was 100·4° and pulse 84, and there was slight albuminuria present. The case was treated with **Dusting Powder** and **Arsenic**, and recovery ensued. The blood showed no eosinophilia, and although no diplococci were found in the bullæ, as has been previously noted, the fluid therefrom gave cultures of the bacillus coli. Major W. Turner[2] has noted in India several cases of what he calls pemphigus contagiosus. The disease was characterized by the outbreak of vesicles varying from a pin-head to an inch in diameter, and with no inflammatory area round them. On examining scrapings from the base of the vesicle the author found Leishman bodies in great numbers. These bodies are 2 to 4 μ long, have a sharp outline, and one end pointed. Identical bodies have been found in Oriental boil.

References.—[1]*Brit. Med. Jour.* Oct. 1, 1905; [2]*Jour. of R.A.M.C.* vol. iv, 1905, p. 319.

PERICARDITIS. *Alfred H. Carter, M.D.*

Several papers on this subject, published during the past year, suggest a few comments. As regards prognosis, T. Fisher[1] points out that the rheumatic form occurring in children under twelve is always a serious matter; and, even between twelve and twenty years of age, is often serious; but after this age, if recovery from the acute attack takes place, subsequent ill-effects are exceptional. With regard to pericarditis other than rheumatic, whether in childhood or adult life, complete recovery is the rule.

Scott and Le Conte[2] emphasize the liability to purulent pericarditis in pneumonia, though more often it is of a sero-fibrinous type. As to the diagnosis of pericardial effusion, most writers admit occasional difficulty. One of the most trustworthy signs is that the line which limits the relative precordial dullness on the right side makes an obtuse angle with the upper hepatic line of dullness, in contrast to the acute angle observed in connection with an enlarged heart.

Paracentesis of the Pericardium has occupied a good deal of attention, especially with regard to the selection of the best point for puncture. Recognizing the difficulty in being sure of avoiding wounding the pleura, Thayer[3], in an able paper, concludes that the left sixth space in the vertical mammary line is the best spot. If, however, there is reason to think the heart reaches this point, then a little further outwards. Scott and Le Conte (loc. cit.), speaking of incision, suggest the fourth left interspace, from the sternum towards the apex-beat. Döbert[4] reports four cases, in two of which puncture was made in the fifth left space, close to the sternum. In the other two, the fourth space to the right of the sternum was selected; on one occasion after failure to get fluid in the fifth left space.

Paracentesis should always be preceded by exploratory puncture with a fine needle, and should be reserved exclusively for those cases in which "the limits of tolerance of the heart are passed, and the pheno-

mena of cardiac adynamia appear." One point further is worth noting, namely, that according to Shapojshnikov, in most cases, even in very large effusions, the heart remains *close* to the anterior wall of the pericardial sac. In a case of Döbert's (loc. cit.) no fluid could be obtained when the patient was lying down, the heart being felt in contact with the needle; whereas 10½ oz. were withdrawn when in a sitting posture.

References.—[1]*Brit. Med. Jour.* May, 1905; [2]*Amer. Jour. Med. Sci.* Sept. 1904; [3]*Johns Hop. Hosp. Bull,* May 1904; [4]*Brit. Med. Jour.* July, 1904.

PERICOLITIS SINISTRA. *Robt. Hutchison, M.D.*

The above term is applied by H. D. Rolleston[1] to a condition, not very rare, which resembles perityphlitis except that it occurs on the left side of the abdomen. Like perityphlitis, it may occur in different forms; thus there may be: (1) Local peritonitis of comparatively slight intensity around the descending colon or the sigmoid flexure; (2) A local abscess in connection with the descending colon, which may eventually burst into the general peritoneal cavity and set up *general* peritonitis.

1. In the commoner and less severe form the clinical features are often spoken of as fæcal accumulation or impaction, and have been described as sigmoiditis or perisigmoiditis. Bittorf described four cases as acute circumscribed sigmoiditis, but since the process is not necessarily confined to the sigmoid flexure the inclusive term of pericolitis sinistra is perhaps more suitable. Hemmeter gets over the difficulty by describing cases included in the group as sigmoiditis and pericolitis. After constipation of more or less duration the patient experiences pain in the left iliac fossa, usually has a somewhat raised temperature, and may vomit. On palpation there are deep tenderness, muscular resistance, and a more or less cylindrical tumour palpable in the left iliac fossa, features which suggest appendicitis on the left side. Leucocytosis and indicanuria have been noted in some instances.

The symptoms are relieved by removing the fæcal accumulation, preferably by repeated **Enemata** at first, and then by **Purgatives**, such as castor oil. For the pain Hemmeter recommends an **Ice Bag** in the early stages, followed, if swelling persists for four days, by **Hot Poultices.**

2. Localized abscess in connection with perforation of a stercoral ulcer, either in a false diverticulum or in the wall of the colon, may be either intra- or extra-peritoneal, and in both cases may extend widely along the side of the colon, thus resembling the spread of an appendicular abscess. The method of formation of this form of pericolic abscess is analogous to that of a localized abscess above a malignant stricture of the bowel. It appears probable from a case recorded by Mayor, that a pericolic abscess due to perforation of a stercoral ulcer may discharge into the colon by ulcerating the coat of the colon from without (exogenous ulceration). A fistulous communication between the bowel and the urinary bladder may also be set up. The clinical features of a pericolic or perisigmoid abscess may be difficult to interpret correctly, especially when no definite swelling can be felt, and the diagnosis

of carcinoma of the colon is very likely to be made when a mass is palpable.

If the presence of an abscess is diagnosed, it should be opened. A fæcal fistula, however, may be expected, and in a case recorded by Georgi fatal peritonitis followed exploratory laparotomy on an abscess close to the sigmoid flexure, and due to perforation of a diverticulum.

3. Lastly, rupture of a circumscribed pericolic abscess into the general cavity of the peritoneum may occur and set up fatal perforative peritonitis.

Reference.—[1]*Lancet*, April 1, 1905.

PERITONITIS. *A. W. Mayo Robson, D.Sc., F.R.C.S.*

The treatment of general peritonitis is one of the departments of surgery that has still its depths and difficulties. This is shown by the fact that the subject has been chosen for discussion this year both by the International Society of Surgery, and by the French Surgical Congress. The conclusions generally arrived at were :—

1. That early operation is the most important foctor.

2. That rapidity in operating, combined with gentleness and removal of the cause, are important features of success.

3. Irrigation with normal saline solution is almost universally adopted.

4. Drainage is as a rule employed, the best forms of drain being smooth and non-adhesive.

5. Lavage of the stomach, repeated as often as distension or vomiting seem to indicate it, is undoubtedly very useful.

6. The administration of fluid nourishment by rectum or by infusion is universally followed.

7. Enterostomy as a routine procedure is adopted by some operators and condemned by others ; the safe course is to make no absolute rule. In case of marked distension I have found great benefit to follow emptying the bowel by one or more small openings, which are then closed; only adopting a more prolonged drainage through a tube when the paralytic distension is extreme.

8. The ideal treatment by continuous irrigation or by continuous bath treatment as carried out by Mr. Ballance[1], has not met with universal approval, nor as yet has it been followed by success.

Immunizing Injections for the Prevention of Peritonitis.—It is well known that even by the most careful technique it is not always possible to perform resections or anastomoses involving the gastro-intestinal tract without infecting the peritoneum to some extent. This infection, in a moderate extent, unaccompanied by extensive traumatism and by local developments, is of no serious import, producing at most a merely local and transitory reaction. It occasionally develops, however, into a fatal peritonitis, even when every precaution has been taken by the skilled operator ; hence the importance of measures having for their end either the prevention of infection, or the increase of tissue resistance to such an extent that the infectio may prove innocuous.

Mikulicz-Radecki[2], experimenting in the latter direction, notes the fact that certain injections administered hypodermically produce an artificial hyperleucocytosis associated with an increased bactericidal value. Salieri, moreover, has shown that by injections of small quantities of normal saline solution the natural resistance of the peritoneum against coli infection could be increased sevenfold to sixteenfold. Mikulicz-Radecki, in his laboratory research, first demonstrated that injections of 0·5 per cent **Neutralized Nucleic Acid** increased the power of resistance of the peritoneum sixteen to twenty-fold. Repeated intraperitoneal injections raised the resistance of the peritoneum to forty times the normal.

For the purpose of simulating to some extent natural conditions, laparotomy was performed upon a number of guinea-pigs, and through an opening in the stomach or intestine such contents as could be obtained from the immediate neighbourhood of the incision were squeezed into the peritoneal cavity. Four out of five animals not previously prepared died of peritonitis within sixteen hours. The fifth, after a serious illness, recovered. Of the ten animals similarly treated, but prepared beforehand by injections either of **Nucleic Acid** or of **Sterilized Bacteria Coli,** all recovered. In each case laparotomy was performed seven hours after the injection, this having been found to be the time when the hyperleucocytosis developed. A further line of experiment, in which the immunizing injections were made some time during or after the operative infection of the peritoneum, showed that the therapeutic effect was much less marked than when such injections preceded infection.

On the basis of this experimental research, neutralized nucleic acid was employed in the surgical clinic as a **Preparatory Measure for Operations** upon the gastro-intestinal tract. As a rule 50 cc. of a 2 per cent solution was used. The adult man received about 1 gram of nucleic acid to 75 kilos. of body weight. Fifty-eight cases were treated in this way. In fifty-five the operations were abdominal. In four cases the operations were postponed, so that they did not take place until more than thirty-four hours after the injection was given. As in animals, there was constantly observed in man a hyperleucocytosis in the blood, mostly preceded during the first hour or so by hypoleucocytosis. The operations were mostly performed in from thirteen to nineteen hours after the injection. The optimum for nucleic acid injection is reached in animals in seven hours, but it seems to occur in man considerably later. Twelve hours is the time fixed by experience, which enables the surgeon to operate on the rising tide of leucocytosis.

As to the technique accompanying the injection of nucleic acid, the most unpleasant factor for the patient is local reaction. A tenderness and slight swelling around the point of injection remains as a rule throughout the day. Twice there was an intense and erysipelatous redness, which disappeared without leaving a trace twenty-four hours after. There was noticed also a slight increase of temperature of one or two degrees; very exceptionally it rose to 102°. There was no alteration in the urine, and no change in the patient's general condition.

In 10 cases of resection of the stomach for carcinoma, 9 recovered. The tenth died ; after seven days of uninterrupted progress he developed pneumonia, which proved fatal three weeks after operation. Of 22 cases of gastro-enterostomy and entero-anastomosis, 19 recovered, 3 died. None of these fatal cases was due to post-operative peritonitis. Of 6 cases of resection of the intestine, 4 recovered, and 2 died ; and neither of these was due to post-operative peritonitis. The after-course of the remaining cases showed entire absence of peritonitis.

In addition to the use of nucleic acid, Mikulicz-Radecki employs copious flushing with **Normal Salt Solution,** leaving as much as is practicable in the peritoneal cavity.

The general impressions gained from this method are that while it gives no absolutely certain immunization, it increases the natural immunity, and that the cases treated by it have given more favourable results, both as to ultimate recovery and smooth convalescence, than cases where the operations were performed without this preparation. This immunization is based on such clear laboratory findings that it is worthy of careful consideration.

Borchardt[3] also describes experiments on guinea-pigs undertaken for the purpose of determining the possibility of increasing the resistance of the body to peritoneal infections with the bacillus coli communis. The agents used were nucleinic acid, horse serum, and physiological salt solution. Subcutaneous injections of the two latter proved efficient to protect the animals against subsequent injections of fatal doses of the colon bacillus, but the nucleinic acid was found ineffectual, and also gave rise to severe local reactions. Most of the experiments were conducted by injecting the protecting substances into the peritoneal cavity. All three agents applied in this way sufficed to augment the natural resistance, so that two or three times the ordinarily fatal dose of bacteria could be survived, but the author gives the preference to the salt solution. It was found that the highest point of the resistance curve was reached about forty-eight hours after the injection, which is much later than the highest leucocytosis. The protection lasts about four days. The author believes that by this method the dangers of laparotomy may be diminished.

Post-operative Intestinal Paralysis.—Paralysis of the intestines, as indicated by progressive meteorism, bilious vomiting at irregular intervals, absolute constipation, and rapid, thready pulse, is a condition from which patients not infrequently used to perish shortly after operation. In most of these cases countless autopsies have shown that there is no true infection present, but simply an accumulation of gas in the intestines. Based on an experience of three years, Arndt[4] strongly recommends the hypodermic use of 0·001 gram of **Eserine Salicylate** in freshly-prepared solution for the treatment of this condition. He has never used more than 2 mgrams in one day, but two or three times this amount may be used with safety. If the specified dose is not effective, it is probable that a microbic infection is present. In most of the writer's cases relief, shown by the passage of flatus, was

obtained within an hour. Frequent lavage was useful in overcoming the associated gastric distention. No ill effects were observed in any of the cases.

To prevent adhesions it is essential to maintain peristalsis. D. H. Craig[5] holds that it is not advisable to keep the bowel at rest unless it has itself been involved in the operation. Experiments show that stimulation of the splanchnic nerves produces reflex inhibition along the whole intestinal canal; therefore to restore peristalsis we must counteract the spinal reflexes acting through the splanchnic nerves which have been excited by the operative manipulation. He has used eserine salicylate, prepared from Calabar bean, in doses of $\frac{1}{40}$th of a grain, given hypodermically. It begins to cause peristalsis in from a quarter to half an hour; as a spinal depresso-motor it counteracts the inhibitory reflexes of the splanchnics. In some cases the bowels move spontaneously in from twelve to twenty-four hours, but if they have been well emptied before operation no action occurs, as there is not enough liquid to distend the colon and rectum and produce defæcation, and eserine does not cause transudation into the intestine like the salines. However, the presence of borborygmi and a soft abdomen show that the paresis has been overcome. In case an overdose of eserine be given, atropine is the antidote.

Enterostomy in Peritonitis.—In a paper based on an experience of the trial of a method in forty-one cases, in a single institution, and briefly reviewing histories of intestinal paralysis and distension incident to peritonitis, Greenough[6] holds that the obstruction of the intestine in diffuse peritonitis is due to suspension or paralysis of peristalsis, which in turn is caused by inhibition, toxic paralysis, and over-distention. It may also be attributed to mechanical causes, such as inflammatory infiltration of the bowel wall or adhesions.

He strongly advocates **Enterostomy** in the graver forms of diffuse peritonitis, since thus the gases and decomposing contents of the bowel are drained, and relief of paralysis of peristalsis is obtained—i.e., over-distention is removed. Moreover, thus the bowels can be subjected to lavage, and there can be introduced stimulants, nourishment, fluids, and cathartics. He uses the Mixter tube in the performance of these operations. It should be applied to the cæcum. He notes that spontaneous closure of the resultant fistula may be expected if the opening is kept below the level of the parietal peritoneum. He has apparently shown that by a systematic use of enterostomy in the graver forms of diffuse peritonitis, the number of patients dying on the second, third, or fourth days after operation is reduced. Attention is drawn to the fact that visible peristalsis and spasmodic pain in intestinal obstruction always indicates a mechanical cause for the obstruction, and the persistence of symptoms unrelieved by enemata and cathartics is an indication for operation. Under such circumstances, enterostomy, if indicated, should be applied to the part of the intestine nearest above the obstruction.

As to the statistics of this operation, in the Massachusetts General

Hospital, in the last four years, forty-one cases of diffuse peritonitis were treated by enterostomy, in addition to other operative measures. It was done as a first operation in 24 cases, of which 5 recovered. In 17 cases it was done as a secondary operation; one case recovered. Multiple incision, irrigation with salt solution, and drainage, were employed in the majority of the cases. Although a superficial glance at these figures is not convincing as to the value of enterostomy, a closer study and comparison with other measures apparently show that the method was distinctly serviceable in lessening the mortality.

The method of performing this operation by the Mixter tube is very simple. The latter is of glass, bent at a right angle, about one-half inch in diameter, and provided with a flange and a collar, about a quarter of an inch apart, at the lower end. A purse-string stitch is introduced in the intestine, and in its centre a linear incision half an inch long is made parallel with the long axis of the bowel. The flanged end of the tube is inserted into the bowel, and the purse-string stitch is tied under the collar, thus preventing leakage, but securing the tube in place. The end of the purse-string stitch is then carried through the parietal peritoneum, just below the margin of the abdominal wound, thus securing the opening below the level of the abdominal wall. A rubber tube is attached to the outer end of the glass tube and conducted through the dressings to a receptacle beside the bed.

Pneumococcus Peritonitis.—A report of five cases by Frank S. Mathews[7] draws prominent attention to this interesting subject. In symptoms, course, pathological anatomy, and prognosis, pneumococcus peritonitis differs considerably from other types of peritonitis. A knowledge of these characteristic features of the disease will considerably aid one in making a diagnosis. The following description is largely borrowed from the articles of Jensen and von Brüns.

Frequency.—It is rare as compared to other pneumococcus infections. Netter, in 104 pneumococcus infections of adults, found no case of peritonitis, and in 47 such infections in children found it once. Moreover, among 140 cases of peritonitis bacteriologically examined he found the pneumococcus but twice. This is the more remarkable when it is added by Netter that in autopsies on pneumococcus pneumonias he was regularly able to demonstrate the pneumoccocus in cover-slip preparations from the peritoneum. Flexner and others have confirmed this observation. Jensen records 106 cases of pneumococcus peritonitis. Several observers have seen from five to eight cases each. This would suggest that the disease is more frequent than hitherto supposed.

Age.—It is perhaps three times as frequent in children as in adults.

Sex.—Under fifteen years of age it is seven times as frequent in girls as boys. The two sexes are equally affected in adult life.

Mixed infection is infrequent, but has occurred when the disease has been the result of intestinal processes, as appendicitis and gastric ulcer.

Pathological Anatomy.—To one familiar with pneumococcus

empyema very little need be said. There is a very fibrinous exudate without odour, of greenish yellow colour. The consistency varies as in empyema : in one case the exudate is practically solid, in another quite fluid, with perhaps large masses of fibrin. One to four litres of pus have been evacuated in reported cases.

Localization.—There is a decided tendency for the process to become localized in the pelvis and hypogastrium, forming there a large, thick, walled abscess. There are other cases in which the process is diffuse, covering every spot of peritoneum with thick fibrinous exudate.

Termination.—A considerable number of cases have been discovered at autopsy ; a number have ruptured through the abdominal wall at the umbilicus, one has discharged through the vagina. A large percentage of the incisions for hypogastric abscess have resulted in cures.

Associated Lesions.—Among these the most frequently observed are empyema, pneumonia, pericarditis, otitis media, and intestinal lesions. Salpingitis has been noted a few times in adults. In the majority of cases reported the peritonitis has appeared primary. There has been no history of pneumonia, nor has pneumonia, as a rule, been present at autopsy. In a few cases a pneumonia has followed the peritonitis.

Symptoms.—The most characteristic clinical picture is seen in the apparently primary cases, and three stages may readily be distinguished :—

1. Sudden onset with high fever, vomiting for a day or two, tenderness and distention. There is little muscular rigidity, and the pain and distention are not so marked as in the other types of peritonitis.

2. After a few days vomiting ceases, temperature falls often to normal. Diarrhœa, often present in the first stage of the disease, is the rule in the second stage. The amelioration of symptoms is pronounced, appetite returns, and the child looks better.

3. Then with the increase of exudate there appears a tense cystic mass in the hypogastrium, temperature rises, and shows marked morning and evening remissions and exacerbations. There is cachexia and weakness, and the case terminates in from one to four months in death from exhaustion or in recovery following operation or perforation at the umbilicus.

Prognosis.—This is one of the less virulent types of peritonitis, since there is such a pronounced tendency to the localization of the process by the abundant fibrinous exudate, thus forming one or more abscesses. As already mentioned, there are two types of the disease—the diffuse, which may be expected to result fatally unless future experience shows that cases can be headed off by early operation, and the localized, which usually results fatally, unless operation is undertaken. But when the localized form is operated upon, 80 per cent of cases may be expected to recover. This high percentage of recovery has been obtained in cases operated upon from seventeen days to four months from the beginning of illness, and in presence of one to four litres of pus.

Differential Diagnosis.—The late stages of the disease simulate tubercular peritonitis. In the second stage, with diarrhœa and slight distention, the picture is not unlike that of typhoid. In the early stage one may question whether a peritonitis exists at all, since distention and pain are not necessarily marked, and the bowels move readily with cathartics. The question of peritonitis secondary to appendicitis will arise, and in some cases the appendix has been the source of infection. The acute stage passing into one of falling temperature with localization of symptoms in the pelvis may simulate gonorrhœal peritonitis.

Etiology.—Following Jensen, we may recognize the following methods of infection :—

1. Through a wound. One such case is reported following a hernia operation.

2. Through the diaphragm. This may be either an actual extension of inflammation from the thorax through the tissues of the, diaphragm or a transportation of bacteria by the lymphatics from the thorax to the abdomen. This can undoubtedly occur, even though it involves a retrograde transportation, that is, a turning about of the usual lymph current, which is from peritoneum to thorax.

3. Through the genitals. The greater frequency of the affection in girls naturally has suggested the genitals as a portal of entry. However, there is no other proof of it than this single fact. Further, pneumococcus tubal infections are very rare, and have only been observed in adults. Moreover, in adult life males are as often affected as females. We must admit that there is at present no satisfactory explanation of the much greater frequency of the disease in girls.

4. Through the intestinal tract. Flexner was the first to report a pneumococcus peritonitis secondary to intestinal ulceration. It has also followed ulcer of the stomach.

5. Through the blood. Pneumococci are often found in the blood in pneumonia, and from this source bone and joint infection may occur. In the same way in a pneumococcus septicæmia peritonitis may appear as a terminal inflammation.

6. From pneumococcic foci in the abdominal organs.

The depositing of the cocci in the peritoneum is not alone enough, however, to cause the peritonitis, as is shown by the frequent presence of the germs in cases of pneumonia in the peritoneum without a peritonitis. Some predisposing factor must be assumed. We can say little definitely. There is no reason to think any case due to intestinal infection. As there was empyema in four cases and pneumonia in the fifth, it would seem likely that all cases were primarily infections of the respiratory tract.

It is not difficult to understand the fatal termination of these cases when one recalls the multiplicity of lesions, as, for instance, empyema, pericarditis, and peritonitis or empyema, peritonitis and probable meningitis. When we class pneumococcus peritonitis among the less virulent types, we must remember that the cures have been chiefly in cases where peritonitis was apparently primary, and where operation

was not undertaken for a generalized process, but for a localized abscess anywhere from two weeks to several months from the beginning of illness. The mortality will always no doubt be high where there are many pneumococcus lesions, and especially where, as seems likely in some of the cases, the peritonitis is part of a pneumococcus septicæmia.

One will be aided in the diagnosis of pneumococcus peritonitis in the presence of infections of the respiratory tract, if he places most reliance upon abdominal pain and tenderness. One must not rule out peritonitis, because, after the acute onset, temperature begins to subside or the patient seems better. Peritonitis must be kept in mind so long as there is abdominal pain and tenderness, even though temperature is normal, bowels move regularly, and there is little or no distention.

References.—[1]*Lancet*, Oct. 24, 1904; [2]*West London Med. Jour.* July, 1904; [3]*Deuts. Med. Woch.* Dec. 1, 1904; [4]*Centr. für Gyn.* Mar. 5, 1904; [5]*Amer. Jour. Obst.* 1904, p. 449; [6]*Boston Med. and Surg. Jour.* May 19, 1904; [7]*Ann. Surg.* Nov. 1904.

PERITONITIS (Tubercular). *Robt. Hutchison, M.D.*

Medical Treatment.—Fedeli[1], whilst fully recognizing the possibility of spontaneous recovery, and the advantages of surgical treatment in certain cases, points out that there is a large group of cases of chronic tuberculous peritonitis which may be successfully treated by medical means, and gives two examples so treated with complete recovery. The particular method he advocates is that described by De Giovanni, and consists in the application of **Leeches** to the hæmorrhoidal veins, coupled with strong **Counter-irritation** of the abdominal walls by means of croton oil. The author's first case was that of a girl aged sixteen, with tuberculous family history, who got wet just before a menstrual period and developed a tuberculous peritonitis, with right ovaro-salpingitis and ascites. The illness dated from October 1st, 1893. On November 12th paracentesis was performed for relief of urgent symptoms, and the right labium, which was much swollen, scarified and dusted with iodoform. The ascites slowly returned about a month later. In February, 1894, five leeches were applied to the hæmorrhoidal veins, and for two days the abdomen was painted with croton oil, and as soon as the rash had healed, iodoformized collodion (4 per cent) was painted on. Improvement set in almost immediately, and by March, 1894, all traces of ascites had disappeared, menstruation (which had ceased) reappeared, and the patient has remained well ever since. The second case was effectively treated by repeated applications of croton oil. Neither of these cases was likely to have recovered spontaneously.

Reference.—[1]*Brit. Med. Jour.* June 25, 1905.

PERTUSSIS. *G. F. Still, M.D.*

Whooping-cough is generally held to be particularly dangerous in very young infants, and to become progressively less risky as age advances. Voelcker[1] in 161 cases observed 46 to be fatal, and of these 46, thirteen were in infants under one year, and eighteen in

children under two years, so that 75 per cent of the fatal cases were in children under two years of age. Porak and Durante[2], however, report an epidemic amongst premature and feeble infants who were being suckled by wet-nurses amongst whose children there was whooping-cough. Of the foster-children 40 out of 44 escaped infection altogether, and the 4 infants with whooping-cough recovered; none had any complications; whereas of the wet-nurses' own children, whose ages ranged from one to ten months, 10 out of 14 took the disease, and in 7 of these there was bronchopneumonia; but none died. These observers conclude that so far as could be judged from this epidemic, the younger the infant the more benign is the pertussis.

Amongst the complications of pertussis by far the most frequent is bronchopneumonia, and this is also one of the most grave. Voelcker found it fatal in 50 per cent of those in which it occurred. Other respiratory complications are pulmonary tuberculosis, which proves fatal in nearly 10 per cent of severe cases of whooping-cough, according to Voelcker. Bronchiectasis, empyema and serous effusion are less frequent; acute emphysema of greater or less degree is present in a large number of cases; subcutaneous emphysema Voelcker found in 2 out of 161 cases. Of nervous complications one of the commonest is convulsions, and it is evident that these are often severe in degree, for the same observer reports that 6 out of 9 cases ended fatally. But without ending fatally convulsions may prove disastrous in pertussis, as in a case recorded by Babinski and Tonfesco[3], where a child three years old caught whooping-cough, and in the third month of the disease had a convulsion from which he recovered after a quarter of an hour, but with left hemiplegia which remained permanent. Rarely, more general paralysis has resulted. Moussons and Cruchet[4] report the case of an infant aged two and a half years, who became convulsed during whooping-cough and was then found to be aphasic, and gradually became weak and ataxic in the limbs, and also weak in the trunk and neck. Speech was recovered after five months, and muscular power after several months; the writers attribute the symptoms to a polyneuritis, perhaps with a cerebral hæmorrhage also, both resulting from pertussis. Voelcker also records a case in which aphasia occurred, which he attributes to cerebral thrombosis.

Diagnosis.—Although the diagnosis of pertussis is usually simple enough, mistakes may arise. It is said[5] that a foreign body in the larynx may cause a very similar cough; laryngismus stridulus, the crow of the rachitic child, has often been mistaken for pertussis; so also has the cough produced by enlarged glands in the mediastinum. The same writer states that one of the most suspicious symptoms in the early stage of the disease is the development of a cough which gradually becomes more and more noisy, especially at night.

Treatment.—Porak and Durante, in the epidemic mentioned above, used with success several drugs, **Grindelia, Belladonna,** and **Benzoate of Soda.** The second of these is perhaps most widely recommended. Voelcker, in a series of careful observations on the drug

treatment of pertussis, found belladonna to be definitely useful. Stepp[6] recommends fluoroform, in saturated solution (2 to 2½ per cent) in water. It has the advantage of being tasteless, odourless, and harmless. A teaspoonful to a dessertspoonful is given every hour, even to babies a few weeks old. A tablespoonful may be given to children beyond the age of infancy. The one disadvantage attaching to this drug is its price; it is somewhat expensive. The number of attacks of whooping falls rapidly when this drug is given, for instance from 55 per diem to 19 per diem within a week; but it was evident in some of the cases that the drug must be given frequently and in sufficient doses to produce this effect; for instance, when a teaspoonful every hour had no effect on a child ten months old, the dose was increased to a tablespoonful. The following prescription has been recommended[7]:

R Syrup of belladonna	1⅔ oz.	Syrup of digitalis	⅚ oz.
Syrup of valerian	⅚ oz.		

For a child under two years of age ½ a teaspoonful daily: but the dose to be increased by ½ a teaspoonful every second day, until 2 teaspoonfuls are taken daily. For children of 2 to 5 years the daily dose may reach as much as 6 teaspoonfuls. Perier[8] has used with success a mixture containing **Tussol**, the dose of which is 1½ grains for each year of age. Swoboda[9] has used **Antitussin**, which is a fluoroform compound; it is an ointment with a pleasant aromatic odour; it is easily absorbed, and readily diffusible through the skin. A quantity the size of a bean is rubbed into the skin of the back and front of the chest. Considerable improvement resulted in 50 per cent of the cases treated thus.

Kilmer[10] publishes further experiences with his **Elastic Abdominal Belt.** A stockinette band is first applied round the trunk from the armpits to the pubes; two shoulder-straps are fixed on to this to prevent the band slipping down. Over this a five-inch elastic bandage is applied round the abdomen, on which it should fit firmly, being pinned in place when very slightly on the stretch. This abdominal support Kilmer finds of great value in controlling obstinate vomiting in pertussis, and considers that life may be saved by it where this vomiting is causing great inanition. Should the vomiting continue after the belt has been applied, this is slightly tightened, and may then prove effectual. The belt seems to act primarily by preventing the vomiting, but it also seems to shorten the disease. In eighteen cases, where the whole number of vomiting attacks during a week had amounted to 3951, this was reduced by the application of the belt to 461 per week. It has been suggested that the difficulty of deep inspiration is the reason that such abdominal pressure diminishes the cough. Gilbert[11] very reasonably suggests that such pressure may do harm by favouring the occurrence of hernia.

It has been observed[12] that **Vaccination** with ordinary calf lymph has been followed by cessation of whooping-cough within a few days; but doubt remains as to whether this is due to some inhibitive action

of one infection upon another in general, or whether the vaccinia virus has some specific antagonism to that of pertussis.

REFERENCES.—[1]*Clin. Jour.* 1902 ; [2]*Presse Méd.* April, 1904 ; [3]*Ann. Méd. et Chir. Inf.* Mar. 1, 1905 ; [4]*Ibid*, p. 166 ; [5]*Med. Press*, June 20, 1904 ; [6]*Ther. Monats.* Nov. 1904, *Scot. Med. and Surg. Jour.* Jan. 1905 ; [7]*Jour. de Méd. de Paris*, Mar. 27, 1904 ; [8]*Ann. Méd. et Chir. Inf.* Mar. 1, 1905, p. 174 ; [9]*Wien. klin. Runds.* June 5, 1904 ; [10]*Journ. Amer. Med. Assoc.* vol. ii. 1904 ; [11]*Brit. Med. Jour.* Aug. 6, 1904 ; [12]*Lancet*, Aug. 6, 1904.

PHARYNX (Disorders of). *P. Watson Williams, M.D.*

Pneumococcal Angina.—Though the occurrence of inflammatory lesions of the various mucous membranes, with or without membranous exudation has long been recognized, primary inflammation of the fauces due to the same organisms is rare, and especially fatal cases such as that recorded by Pasteur arising in a well-nourished boy, aged three and a half years. He had sore throat, with great pain on swallowing, and high fever. The urine was free from albumin, pulse 120, respiration 40, temperature 103 ° F., spleen enlarged. The tonsils were swollen and intensely injected, but without exudation ; the glands at the angle of the jaw were swollen and tender. There was no nasal discharge. By the ninth day the throat was intensely red and glistening, but the uvula and soft palate brown and sloughing, and later the uvula and palatal arches were the seat of a grey gangrenous slough. Then broncho-pneumonia developed, and the patient died on the twenty-second day of illness. Post mortem the heart was natural, but a gangrenous patch was found in the upper lobe of one lung. There was no meningitis. Cultures from the pharynx and lungs showed that the diplococcus pneumoniæ predominated. The author refers to French observers who describe five varieties of pneumococcal pharyngitis : (1) The suppurative ; (2) The pseudo-membranous ; (3) The follicular ; (4) The inflammatory or erythematous ; and (5) The herpetic.

Chronic Hyperplasia of the Pharynx and Larynx.—A peculiar form of chronic hyperplasia of the mucous membranes is described by Semon, who has observed three cases, though the first recorded example of the disease was by Brown Kelly some years ago. While referring fully to Kelly's reported case, Semon differs from him in the use of the term "sclerotic hyperplasia," and, unlike Kelly, does not regard the affection as altogether analagous to subglottic hypertrophic laryngitis. The disease is characterised by a uniform thickening of the affected areas which present a peculiar yellowish, lardaceous looking appearance, the infiltration being smooth and semi-solid. The uvula becomes enormously thickened, the soft palate thick and hanging like a curtain, while the infiltration of the faucial pillars, or of portions of the submucosa of the pharynx, forms thick bands extending down to the œsophagus and interfering more or less with deglutition. When the larynx was involved, the thickening sometimes involved an arytenoid region, in other cases the epiglottis and aryepiglottic fold. The appearance of the naso-pharynx was reduced

in Kelly's case so as to barely admit a finger, and, like the bands of the pharynx, were smooth, grey, and of the consistency of muscle. There is a tendency to improvement and lessening or disappearance of the infiltration in the course of years, but the course of the disease is unaffected by anti-syphilitic treatment. The etiology is obscure, there is no evidence of infection by specific micro-organisms, and tuberculosis, syphilis, and rhino-scleroma, says Semon, seem to be quite out of the question in them all.

We are enabled to reproduce Kelly's illustration of the first recorded case, and we quote Shattock's pathological description, as given by Semon, as follows :—

The uvula is generally enlarged, its cross section having a diameter of 9 mm. and its length being correspondingly increased. The

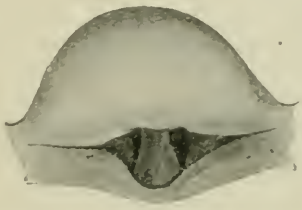

Fig. 54.

Fig. 55.

Fig. 56.

investing epithelium is intact and normal; between its elements a few polymorphonuclear leucocytes have wandered from the subjacent tissue. The increase in size is due to a diffuse formation of finely fibrillar connective tissue, in the central of which there occurs small groups of fat cells. The proper corpuscles of the new connective tissue have the usual characters, and are moderate in number. The uniformity of the microscopic picture is only broken by denser collections of cells which bear an obvious relation to the smaller blood vessels, and are almost confined to the periphery of the cross section, though here and there similar collections occur in the more central parts. The cells composing the clusters consist of lymphocytes and

intermingled plasma cells (Unna). Neither mast cells nor eosinophile leucocytes are present in the section. Unna's acid orcein reveals a mesh of fine elastic fibrils pervading the connective tissue. The arterioles are everywhere normal. At the periphery of the sections a short way beneath the epithelium, a certain number of the capillaries which lie in the small cell infiltration are plugged as a result of endothelial proliferation. No micro-organisms are demonstrated by Gram's or other methods. This is equally the case when the decolourising action of alcohol is evaded after staining with carbol fuchsin, by the use of glycerin as a mounting medium. (See *Figs.* 54 to 56.)

The examination shows no more than the anatomical character of the condition ; it does not demonstrate its cause. The lesion presents none of the structural features of tuberculosis, syphilis, or rhinoscleroma. The overgrowth of connective tissue has no relationship with a neuro-fibromatous pachydermia, since the nerves are not involved in the general fibromatosis. The enlargement, again, is not due to a dilatation of lymph spaces, as in a lymphangiomatous or lymphangiectatic lesion. Nor does it bear relegating to the group of angio-neurotic œdemas observed in the skin, since the lesion was not sudden either in its onset or at any time in its rate of extension. The complete absence of chronic arterial change further removes any relationship between the disease and erythromelalgia, seeing that in the cases of the last-named condition, which have been histologically examined local arterial disease has been observed. The histological changes approach most nearly to those met with in hyperplastic rhinitis in its later or what has been called its secondary stage ; in this are encountered the same overgrowth of firm, fibrillar, connective tissue and similar small-celled infiltration around the lesser vessels.

References.—[1]*Lancet*, May 27, 1905 ; [2]*Ibid.* Feb. 23, 1905 ; [3]*Ibid.* April 6, 1901.

PHLEBITIS. *Alfred H. Carter, M.D.*

Briggs[1] calls attention to an obscure form of recurrent phlebitis, affecting the veins of the extremities, and occurring in the absence of all commonly recognized causes, such as anæmia, typhoid, and various cachexiæ. The picture presented by the seven cases reported is practically identical with that described by Paget[2] under the head of gouty phlebitis ; but in at least six out of the seven cases there reported, if not in all, there is not the least evidence of anything pointing to a gouty taint. The condition described is a strictly localized superficial phlebitis, commencing somewhat abruptly, and generally affecting one lower limb, but sometimes the upper ; attended with slight local, but no general, inflammatory reaction. It develops slowly, and in successive attacks affects a further stretch of the same vein. The general health during and between the attacks is undisturbed. In discussing the pathology of the condition, the author cannot admit their dependence upon latent gout, or on what Daguillon has described as " non-gouty

arthritism." It is possible that so-called gouty phlebitis may be associated with the group under consideration, but it is pretty certain that gout will not explain many of the recorded cases. The author suggests that the primary change may be in the walls of the veins: characterized by sclerosis—a phlebosclerosis quite analogous to arterio-capillary fibrosis, with which it is frequently associated. Sclerotic alterations of the veins are often observed to take place by fits and starts, to progress at times with great rapidity, and then to remain stationary for many years. The absence of fever, and the fact that the veins themselves never suppurate, contra-indicate an infective origin. The one danger is that of embolism, the liability to which increases as the morbid condition involves the larger part of the vein, and also increases with exertion on the part of the patient during the progress of an attack. And yet, with so little apparently to complain of, the patient can only be restrained with difficulty. Briggs advises that when an obliteration of the lower part of the saphenous vein occurs in an otherwise healthy man, and is followed, after recovery and a period of quiescence, by a second spontaneous attack in a higher part of the vessel, it is advisable to cut down over the saphenous opening under cocaine, and to **Ligate the Vein** at its termination. At any rate embolism is rendered impossible by this means.

References.—[1]*Johns Hop. Hosp. Bull.* June, 1905; [2]*St. Bart. Hosp. Rep.* 1866, II. p. 82.

PHTHISIS.

Wilfred J. Hadley, M.D., F.R.C.S.

I.—Symptomatology.

Laryngeal Crepitus as a sign of Phthisis.—Remonchamps[1] gives this name to a sign which he describes as pathognomonic of pulmonary tuberculosis from its very onset. The procedure is simplicity itself. The patient, preferably in the erect position, stands face to face with the physician. He is directed to open his mouth and then, placing his right hand on the patient's left shoulder, and resting his left thumb on the patient's chin, the physician brings his left ear close to the patient's mouth, keeping it at a distance of two or three inches. He will then perceive, in cases of pulmonary tuberculosis, a fine crepitation which I have termed "laryngeal" merely because its maximum intensity appears to be in the larynx, the latter having for effect to amplify sounds having their origin in lesions of the pulmonary parenchyma. The sound is very similar to that of a fine pen slowly scratching on paper. It is audible both in inspiration and expiration, but more particularly the latter.

He states that this "laryngeal crepitation" is present and audible throughout the whole course of the malady, increasing, diminishing, or disappearing according as the lesions become more marked, improve, or are recovered from. In some instances it is loud enough to be audible without the patient opening his mouth, and he has heard it at a distance of one to three feet from the patient. The author claims to have ascertained and demonstrated this sign in upwards of a hundred

cases. He adds that the transmission *viâ* the mouth of morbid sounds due to lung disease is not confined to phthisis, but "none of these sounds could possibly be mistaken for the crepitation of tuberculosis."

Erni[2] applies the term *tapotage* to describe the reaction which he has found almost pathognomonic of a tuberculous cavity in the lungs. He percusses the chest over the apex of the lung, using for the purpose a flexible knife—a silver paper cutter—weighing about 100 gm. The blade is taken in the fingers and the chest is tapped with the handle, no force being applied, but merely the elasticity of the knife doing the percussion. The handle rebounds as it touches the chest wall. This light percussion produces no effect over normal parts, but when there is a cavity beneath, the percussion causes the subject to cough immediately and expectorate, all in less than a minute.

Shively[3] contributes an interesting paper on *myoidema* with especial reference to its occurrence in pulmonary tuberculosis. This name is given to a peculiar muscular contraction elicited by sharp percussion with the forefinger occurring in the fibres near the point of impact. It occurs in two forms: (1) A nodular form, appearing as a well-defined hard ridge, tetanic in character, raised in a direction at right angles to the course of the muscle fibres: this continues for a few seconds and then subsides; (2) A fascicular form, similarly elicited, which however follows the direction of the muscular fibres, appearing as a linear depression or sulcus of considerable length.

Fascicular myoidema must not be confused with the quivering fibrillary contractions so frequent in progressive muscular atrophy and other lesions of the central nervous system; these are usually clonic in character, while in true myoidema of either variety the appearance is invariably sustained and does not intermit while it lasts.

Cardiac Irritability in Tuberculosis is discussed by Marcel Grosset[4]. The most frequent symptoms are palpitation and tachycardia; these do not necessarily occur in the same patient, nor have they in the writer's opinion the same significance. He describes four types of *palpitation* occurring in tuberculosis:—

1. The chloro-anæmic—in young chlorotic women.
2. That occurring in young males shortly after puberty.
3. That preceding hæmoptysis.
4. The palpitation of tuberculous dyspepsia.

He does not consider that palpitation signifies severity of tuberculosis, but when accompanied with a tendency to vascular engorgement it may be regarded as a herald of hæmoptysis. *Tachycardia* may be due in his opinion to tuberculosis of trachea or bronchial glands, vagus neuritis or tuberculous toxæmia; it may appear at any period of the disease and is not accompanied by palpitation. The patient is usually quite unconscious of the condition. The pulse reaches 120 and the arterial tension is low. Tachycardia he regards as evidence of grave constitutional disturbance, and the earlier in the disease it appears, the more serious is its significance.

Prognostic Value of Ehrlich's Diazo-Reaction.—Holingren[5] believes

that although the value of the diazo-reaction from the standpoint of diagnosis may seem to have been exaggerated in respect to pulmonary tuberculosis, it offers an important element from the prognostic point of view. This reaction fails in more than two-thirds of the cases of advanced tuberculosis : it is exceptional in the first stage of the illness, and shows itself with some frequency only in the third period or at the end of the second. But when it does appear, it is an excellent indication of the future duration of the disease. When the reaction is very definite, the patient will probably rapidly succumb—within two months—and has little chance of living more than six months. With a doubtful reaction one may hope for eighteen months. If it is negative, one can count on exceeding this.

Budden[6] contributes an exhaustive account of his experience of the diazo-reaction. He has watched the reaction in 3000 persons, performing it many times in each. He gives explicit directions for its performance, and considers want of strict attention to method the cause of many erroneous conclusions. His 3000 cases comprised 600 persons in health, no one of whom yielded a positive reaction. He concludes therefore that the reaction is never given by normal urine. The diazo-reaction was present in 96 out of 672 cases of various forms of tuberculosis, in 18 out of 25 cases of measles, in 17 out of 21 enterics, in 5 out of 5 cases of tyhpus, in 4 of 41 cases of lobar pneumonia, in 1 of 16 cases of acute broncho-pneumonia, in 1 of 96 cases of acute bronchitis, and in four out of 4 cases of puerperal septicæmia. The remaining 564 cases comprising almost every acute malady of common occurrence in this country continuously yielded a negative result.

With regard to the *diagnosis* of pulmonary tuberculosis he believes the test to be of assistance in those cases in which the tuberculous mischief is masked by some other acute process. Chronic or acute bronchial catarrh, for instance, often covers tuberculous signs. If the reaction be obtained under such conditions, it should at once lead one to suspect tuberculous mischief. Excluding typhoid, measles, typhus and puerperal septicæmia, every case which gave the reaction in his series eventually proved to be the subject of tuberculosis. After exhaustive enquiry into the large number of cases of tubercle in which he found the diazo-reaction, the author concludes that the reaction is not of any value as regard the *prognosis* of chronic tuberculosis.

II.—Diagnosis.

Serum Diagnosis of Tuberculosis.—Arloing and Courmont[7] contribute a paper on this subject. The serum diagnosis of tuberculosis by means of the agglutination reaction dates only from 1898 ; but since that year, when Arloing first demonstrated the possibility of obtaining liquid homogeneous cultures of the tubercle bacillus, there have been many workers at the subject, and the majority of these agree with Arloing as regards the specific character of the agglutination. In the present paper the authors review the subject at some length, pointing out the principal fallacies, the best technical methods, and the results and

conclusions which they believe themselves entitled to claim. The two chief fallacies are: (1) The neglect of thorough clinical examination of the particular case, so that the positive result of the serum diagnosis is regarded as an error, when in reality a more painstaking research would have established the presence of the disease; and (2) The variability of the homogeneous cultures in their aptitude for agglutinations and the difficulty of maintaining these cultures. To take the last point, Arloing secures his cultures by prolonged shaking of the bouillon media, and in their growth the bacilli in such cultures tend to vary considerably both in their form and staining reactions, and also in their aptitude for agglutination. To overcome this difficulty each of the cultures must be standardised by the use of a human serum of known powers. When the standardised culture is obtained the difficulties of technique are overcome, for the remaining procedure is precisely the same as in the serum diagnosis of typhoid fever. Arloing performs the actual test in capillary tubes, and uses a time-limit of three to five hours. The dilutions must be as low as 1 in 20, 1 in 10, or even 1 in 5. The results of this method are briefly, that tuberculous cases, clinically recognized as such, give from 70 to 85 per cent of positive results, the negative results being chiefly obtained in the most advanced cases. It appears to be of especial value in the early diagnosis of the disease, and, as in all similar laboratory tests, a positive is much more valuable than a negative result.

Cavazza[8] has collected the published records of the relation between the specific agglutinating powers of maternal and fœtal blood serum, and has added a case of his own. The fœtal serum gave always negative results even when the maternal serum showed agglutinating power.

Tuberculin as a Diagnostic Agent.—In an editorial in the *Therapeutic Gazette* of June 15, 1904, a conservative view of the value of this agent is expressed. The author refers to a letter from Bowditch published in the *Boston Medical and Surgical Journal* of March 17, 1904. Without condemning the employment of tuberculin, he does not believe in its free use. Bowditch has tested it in patients who were under the most careful observation, and states he has frequently found himself, in consequence of its use, more in doubt than before. He has discharged patients who failed to react to the maximum dose, who later developed undoubted pulmonary tuberculosis. He cites the case of a patient who received 10 milligrammes of tuberculin without having any reaction, although a few days before tubercle bacilli were found in his sputum. He urges that stress be not laid on laboratory evidence at the expense of clinical experience.

Bandelier[9] strongly recommends the use of tuberculin as a method of diagnosis of early phthisis. He maintains the great value of the tuberculin method is that it distinguishes between the patient with active tuberculous disease and the non-tuberculous patient, or the one with inactive tuberculosis. He believes that for the most part the complications ascribed to the use of tuberculin have followed its unskilful administration, or have arisen independently of it; the

author, who uses it daily, has personally never known it do serious harm. Injections should never be made unless the patient has been found by examination every two hours during the preceding days to be free from fever. The first injection should not be made at night, lest a slight reaction occurring during sleep be overlooked, and a severe reaction should follow the larger dose next given.

The preliminary dose given is, as a rule, 1 mgm., the next dose 5 mgm., the third 10 mgm. A single rise of temperature following any of the smaller doses is not held by itself to denote a true reaction. The dose of 10 mgm. is not exceeded, because larger doses may cause reaction in non-tuberculous patients. Even should no reaction follow the first injection of 10 mgm. of tuberculin, a second injection of the same amount should be made, or some cases will be overlooked. The author emphasizes the importance of having a uniform method of administration everywhere if accurately corresponding results are to be obtained, and he gives statistics in support of his contention. Of 500 of his own patients who received injections during a period of two years, 34·6 per cent reacted to 1 mgm. of tuberculin, 31·2 per cent first reacted to 5 mgm., 19·6 per cent reacted to the first injection, and 7·2 per cent to the second injection of 10 mgm. The maximum dose recommended by many authorities is from 3 to 6 mgm., and it is clear that with such doses a large proportion of the author's cases would have been unrecognized. Thirty-seven patients, or 7·4 per cent of the whole number, did not react; these were discharged from the sanatorium with instructions to report themselves to their own doctors, and during two years not one of them reappeared at the sanatorium.

X-Rays in the Diagnosis of Pulmonary Tuberculosis.—Schnellerberg and Scherer[10] in a careful and elaborate paper conclude that the method is a valuable adjunct to other methods of examination, but does not in any way replace them. It is of particular service in revealing not the presence but the extent of the mischief.

Green and Brook[11] read a paper before the Clinical Society of London. They insist that the full value of the X-ray examination is only obtained by comparing its evidence with that elicited by the other clinical methods. The Röntgen rays could never replace the usual methods of examination. The examination must be carried out by both screen and plate methods. By means of the former the following points could be noted: (1) The height and movement of the diaphragm on the two sides both in quiet (minimum) and forced (maximum) respiration, and these must be compared in front and behind, it having been shown that where the disease was more active or extensive the level of the diaphragm would be higher and the movements more curtailed, and that unilateral limitation of movement of the diaphragm was one of the earliest signs of pulmonary tuberculosis; (2) The position and size of the heart, the shape and slope of the ribs, and the width of the intercostal spaces; and (3) The transradiancy of the lungs and the effect upon this of inspiration. This examination could be carried out with the patient standing up or (preferably) lying down on a

table with a vellum top and a tube below freely moveable in both directions. The skiagrams exhibited had all been taken by the plate-to-back method with the tube from 20 to 24 inches from the plate. The exposure had varied from 30 to 60 seconds. Development should be very thorough and should always be carried out by the medical man himself instead of being left to chemists and photographers, as much could be learnt during the process of development which was not so apparent when the plate was fixed.

The Early Diagnosis of Phthisis.—Giulio[12] draws attention to the quality of the *inspiration* in early diagnosis of pulmonary tuberculosis. He maintains that more value is to be attached to inspiration than to expiration, and he advises attention being paid to that alone. Inspiration, he says, gives data, direct and precise, as to the condition of the alveolar canals and lobuli, whilst expiration indicates more especially the state of the bronchial channels, and the early localizations of phthisis are in the alveoli; hence it is more likely that inspiration should give early evidence of disease than expiration. The chief modes in which it becomes pathologically modified are in the way of roughness, weakness, and interruption, and of these he lays most stress on the first. It is useful to remember that respiration is normally more marked in women, especially at the right apex, than in men; more marked in the erect than the prone position, after meals than before; and in subjects who breathe badly one can sometimes get better breathing by telling them to breathe rapidly with the mouth closed. Interrupted respiration (cog-wheel) probably means impaired elasticity of the lung, and possibly weakening of external respiratory muscles.

Clapp[13] pleads for greater care in *microscopical examination* of sputum. He insists that absence of tubercle bacilli on two or three examinations does not necessarily mean absence of tuberculosis. He quotes cases from his own records in the Massachusetts State Sanatorium at Rutland showing that when tubercle bacilli have been found in the sputum of patients they are not by any means uniformly present at each examination, but often fail to appear for long periods, or are irregularly present. Microscopic examinations, which happen to be made only at such times, would, therefore, be very misleading in diagnosis.

Isambard Owen[14] discusses the detection of early phthisis; he claims that pulmonary tuberculosis in most of its ordinary forms is a disease of essentially intermittent or remittent character. Except in cases where early hæmoptysis draws attention to the lungs, he thinks it is doubtful if we often really see the initial attack at all. A slight attack of tubercle may cause either no symptoms, or none that will lead the patient to seek medical advice. In the absence of hæmoptysis such a case may escape notice till long after the real onset, perhaps not till one, two, or more periods of intermission have passed by. Good treatment may prolong the period of intermission so as to enable cicatrisation to become more complete, and to acquire a greater likeli-

hood of permanency. Intermission and remission he regards as among the natural features of the disease, and may be observed in cases placed under unfavourable circumstances, in cases subjected to almost any reasonable treatment, and in patients receiving no particular treatment at all.

He urges that tuberculosis not rarely attacks the lungs of the elderly and points out how frequently in such the disease is the sequel of a chronic non-tuberculous bronchitis which has often existed on and off for many years. In these cases he finds the earliest sign to be a local change in the character of the bronchitic rhonchus. If the inspiratory rhonchus at one or other apex become broken in the middle, the latter part becoming markedly high pitched, so as to give to the ear the impression of a creak, it should arrest attention. "Creaking" rhonchus (the creak is more often inspiratory than expiratory) in the adult should always convey a strong suspicion of tubercle.

Baumler[15] reviews at some length the early diagnosis of pulmonary tuberculosis. He has noticed that a marked difference on percussion may be present without any lung disease in the apices when the two sides of the chest are not perfectly symmetrical. Slight scoliosis or lordosis he considers may be sufficient to lead to grave errors of diagnosis in this connection. He emphasizes the frequency with which slight hæmoptysis occurs in valvular heart disease, and cites such cases in which the tuberculosis had been wrongly diagnosed. Absence of tubercle bacilli from the sputum only proves that at the time no destruction of a tuberculous focus is taking place. Enlargement of the thyroid gland may cause congestion of tracheal mucous membrane with cough and even slight hæmoptysis. These cases are often mistaken for cast tubercle. The tuberculin test he regards as a most valuable means of settling the question whenever all the usual diagnostic methods give no decisive result.

Pearson[16] discusses pulmonary tubercle in infants and young children. He considers the commonest mistake in the diagnosis is to ascribe the symptoms of some other disorder to the influence of the tubercle bacillus.

On the other hand it is often quite easy to mistake the debility due to the rheumatic infection in children with that of pulmonary tubercle, especially when, as is not unusual, it is associated with wasting and cough. The appearance of a child of the tubercular diathesis is not infrequently much the same as that of a child likely to be the subject of acute rheumatism. Further than this, pain in the side is not infrequently a symptom of rheumatism, and the manifestations of this disease are often for a long time ambiguous.

III.—Treatment.

During the past year the importance of **Preventive Treatment** in dealing with the tuberculosis problem has received increasing attention. Municipal authorities and other public bodies are at last responding to the demands of modern medicine; regulations condemning spitting,

adequate disinfection, and the like, are becoming increasingly common. In some cities the notification of phthisis has been adopted, and in others consumption dispensaries have been established. It is undoubtedly largely to such measures that the steady diminution in the death-roll of consumption is due.

Sanatorium Treatment continues to hold pride of place as the most hopeful plan of treatment, when properly applied to selected cases. Sanatorium statistics remain a confused mass of contradictory figures, and are likely to remain so until such terms as "cured" or "relieved" are reduced to a least common measure. There is a growing tendency to regard with disfavour the building of large and costly sanatoria; smaller and cheaper erections are sufficient and less infective.

Undoubtedly the most important advance in the treatment of pulmonary tuberculosis during the past year has been the elaboration of methods directed towards the artificial production of an increased power of resistance. Wright's discovery of the substances in the blood which he calls opsonins, and the increase in them produced by injections of the new tuberculin open up a new field of possibilities in anti-tuberculous treatment. The results and methods of workers in this field are as yet only in their infancy.

References.—[1]*Med. Press and Circ.*, April 10, 1904; [2]*Jour. A.M.A.*, vol. xlii, No. 17; *Clin. Jour.*, May 18, 1904; [3]*N.Y. Med. Jour.*, Jan. 14, 1905; [4]*Thèse de Paris*, 1904; *Brit. Med. Jour.*, Jan. 27, 1905; [5]*Rev. Franc. de Med. et de Chir.* Feb. 6, 1905; [6]*Brit. Med. Jour.*, May 6, 1905; [7]*Boston Med. and Surg. Jour.*, Dec. 8, 1904; [8]*Il Polic.*, March 5, 1903; *Brit. Med. Jour.*, June 15. 1904; [9]*Beit. zur Klin der Tub.*; *Brit. Med. Jour.*, Dec. 3, 1904; [10]*Med. Chron.*, April, 1905; [11]*Lancet*, May 21, 1904; [12]*Gaz. de Osped.*, July 17, 1904; *Brit. Med. Jour.*, Nov. 5, 1904; [13]*Amer. Med.*, Dec. 10, 1904; *Brit. Med. Jour.*, Feb. 11, 1905; [14]*Brit. Med. Jour.*, April 2 1904; [15]*Ibid*, April 2, 1904; [16]*Pract.*, Sept., 1904.

PINTA. (*See* Skin Diseases, Tropical.)

PIROPLASMIASIS. *J. W. W. Stephens, M.D.*

Koch[1] has described forms in the stomachs of ticks which he considers to be those representing the cycle followed by *Piroplasma spp.* in the tick, adult, egg, larva, and nymph. The pear-shaped organism leaves the red cell and changes into a stellate form. These stellate processes are often arranged at one end of the body and diverge from a chromatin mass. Later forms are found with this stellate appearance at both ends of a cylindrical body. These are taken to be two copulating organisms. Besides these, long oval pear-shaped bodies are found which may be the transition forms leading to the still larger forms found in the eggs of the tick. Developmental forms have not been so far found in the larva or nymphs, but they must exist here, as it is by the young larval ticks that piroplasma is in most cases conveyed.

Reference.—[1]*Deut. Med. Woch.* Nov. 23, 1905.

PITYRIASIS VERSICOLOR. (*See* Skin Diseases, Tropical.)

PLAGUE. *J. W. W. Stephens, M.D.*

Herzog[1] reviews the literature concerning the part played by fleas and other suctorial insects in the transmission of plague. It is quite certain that plague bacilli can be found in the intestines of fleas that have fed on rats sick with plague, but it remains to be shown that fleas can transmit these bacilli to healthy rats. This has not yet been proved. Healthy rats are probably infected from sick rats owing to their habit of eating their dead brethren. The objections to the theory that man contracts plague by being bitten by infected fleas are several, e.g.: (1) Frequently the species of flea found on rats will not bite man; (2) In hospitals where many plague cases are treated, and where sick and healthy are constantly being bitten by fleas and other biting creatures, cases of transmission of the disease from the sick to the healthy are practically unknown. On the other hand there is a certain amount of evidence incriminating *pediculi*.

Hunter[2] records spontaneous plague infection in cats in Hong-kong: the cats are probably infected by rats and mice, and may possibly help to disseminate the disease.

White[3] considers that insects do not transmit plague by inoculation, but by disseminating the bacilli, by contact, in their dejecta, etc. Animals and poultry disseminate the disease in a similar manner. Fish, crabs and oysters are also incriminated. The author considers that man is infected mainly through the alimentary canal, and attaches special importance to examining the lingual and pharyngeal tonsils and the gastro-duodenal mucosa.

References.—[1]*Amer. Jour. Med.* March, 1905; [2]*Lancet*, Ap. 22, 1905; [3]*Med. Rec.* 1905.

PLEURISY. *Wilfred J. Hadley, M.D., F.R.C.S.*

Etiology and Pathology.—The frequency of tuberculosis as a cause of pleurisy has been discussed in various meetings and papers during the year. While it is generally admitted that tubercle is a frequent cause, it comes out that probably some of the cases which, after a serous effusion, eventually develop pulmonary tuberculosis, must not be regarded as primarily tubercular. For even where the serous effusion has been proved to be of rheumatic origin, some of the sufferers have subsequently developed pulmonary phthisis. The reports on the cytological diagnosis of tubercle from examination of serous effusion, show much the same findings as given in last year's *Annual*, but Gibson[1] has found several contradictory cases, and states his conviction "that the relative proportion of the various leucocytes in an effusion (lymphocytes and polymorphonuclears) is an expression of the stage and extent of the reaction rather than a proof of the nature of its cause." Longcope[2] puts it in a different way. He says irritation calls forth a lymphocytic exudate, whilst inflammation calls forth numerous polymorphonuclears. Tubercular affections of the pleura, being usually of a mild nature, are therefore found chiefly lymphocytic, whilst the strong inflammation caused by a streptococcal or pneumo-

coccal affection is chiefly attended by the out-pouring of polymorphonuclear cells.

Gibson[3] says he has found the diplococcus of rheumatism in the urine of pleuritic patients, and urges the systematic examination of the urine.

Physical Signs.—Rickman Godlee[4] draws our attention to the fact that "shifting dullness" in the chest, especially the posterior-bases, does *not* indicate the presence of fluid in the pleural cavity. He says: "The points I wish to emphasize may be summed up thus: (1) The dullness resulting from localized empyema, if there be no gas in the cavity, does not shift at all; (2) That the dullness resulting from a serous pleural effusion shifts very little if at all; and (3) That the presence of pleural adhesions limits or prevents the shifting of the dullness caused by solids or fluids below the diaphragm.

Samuel West[5] remarks: "I should have supposed it to be now generally accepted that the level of dullness in simple pleural effusion, whether serous or purulent, did not readily shift with position." He explains this by pointing out that the lung is collapsed by the pressure of the fluid, and therefore cannot suddenly alter the condition of collapse, which as it were, holds the fluid up against the action of gravity.

Professor Grocco[6] has shown that a pleural effusion transgresses the median line, the mediastinum being pushed over, so that there is a triangular patch of dullness, with apex upwards, on the opposite (or sound) side posteriorly.

The inequality of the pupils[7], frequently seen in cases of pleurisy, with or without effusion, is also seen in other pulmonary affections, e.g bronchitis and pneumonia. It has been variously explained: (1) By pressure of the fluid on the sympathetic; (but as the evacuation of the fluid has no effect, this would seem doubtful); (2) Peripheral irritation by the lung and pleura; (3) Some pressure exerted by a bronchial gland on a branch of the sympathetic.

Treatment.—In the important discussion on this subject at the meeting of the British Medical Association at Oxford, this was thoroughly reviewed. The bulk of opinion was as follows: Osler[8] discussed the importance of early and repeated tapping, not merely as a relief but as the chief means of treatment, and this was generally agreed upon. Acland[9] did not recommend early tapping for serous effusion in children, as he had seen it absorbed rapidly when left alone.

As *remedies* Osler[10] advised local applications to the chest (ice-bag, leeching, etc.). They may be of use in acute cases, chiefly to reduce pain, but have little, if any, effect on the effusion. **Salicylate Treatment,** if the case be rheumatic or in children, may reduce fever and ease pain, but seems useless to remove fluid. **Iodide of Potash,** still so much used, was of very doubtful value. A **Big Blister** seemed sometimes to stimulate absorption. Osler emphasized the importance of the after treatment, bearing in mind the danger of subsequent pulmonary tuberculosis. For this, pulmonary gymnastics, by blowing water

from one Wolff's bottle to another, was recommended early, even before the fluid was completely absorbed—as it aided absorption by expanding the lung.

Finally, all those general hygienic measures (open air and feeding), which have been found to give such good results in cases of pulmonary phthisis, are also most beneficial in cases of pleurisy, and will materially lessen the number of cases of pulmonary tubercle which follow pleurisy.

REFERENCES.—[1]*Brit. Med. Jour.*, Jan. 7, 1905; [2]*Amer. Jour. of Med.*, Feb., 1905; [3]*Lancet*, Aug. 6, 1904; [4]*Ibid*, Feb. 25, 1905; [5]*Ibid*, Mar. 18, 1905; [6]*Med. Press and Circ.*, July 20, 1904; [7]*Brit. Med. Jour.*, Mar. 13, 1905; [8]*Ibid*, Oct. 15, 1904; [9]*Lancet*, Aug. 6, 1904; [10]*Op. cit.*

PNEUMONIA. *Wilfred J. Hadley, M.D., F.R.C.S.*

ETIOLOGY.—Many writers have pointed out that the annual death rate from pneumonia is decidedly on the increase of late years. This has been especially noticed in America. Various explanatory theories have been given. Thus we have: (1) That the disease has increased in virulence, as so many infectious diseases do, from time to time, again to die away to a mere normal, or even a diminished, virulence; (2) That the average individual has now-a-days a lessened vitality, and therefore a diminished resisting power to the disease; (3) Others blame the present day treatment; (4) It must be remembered that pneumonia has always been more prevalent and more virulent in towns than in rural districts, and that the great tendency for rural population to migrate into towns of recent years, may have a marked influence on the pneumonic death rate; (5) More exact diagnosis has led to many cases which, years ago, would have been returned as deaths from pulmonary phthisis, being now found under their true title of pneumonia. So that, as the death-rate from phthisis has been diminished, that from pneumonia has correspondingly increased.

PATHOLOGY.—Bacteriologically, lobar pneumonia has been shown to be due, in the majority of cases, to the pneumococcus (diplococcus lanceolatus of Fraenkel). Bovaird[1] puts the percentage as high as 95, though other germs may be present in some of the cases. Many authorities have described general blood infection with the organism, which might help in the diagnosis of a doubtful case. This general infection accounts for the frequent occurrence of the affections of other organs (e.g., arthritis, meningitis, etc.), which have been conclusively proved to be of pneumococcal origin. Certainly in the majority of cases of primary pneumonia the pneumococcus would seem to be the cause; whilst in secondary pneumonias sometimes the germ of the disease from which the patient is suffering is found in almost pure culture, at others a mixed infection of germs found in the mouth during health, or organisms of suppuration. The difficulty is to decide whether the germs found are a cause or a consequence of the pneumonic process. Most authorities believe that many germs found in the upper air passages during health, and ordinarily non-pathogenic, may, under circumstances of bronchial catarrh (or other conditions of lowered vitality) assume virulent pathogenic powers.

An important note is made by Gordon[2]. He reminds us that the chief point in the identification of the pneumococcus is the presence of a capsule. He finds that the organism, if grown on gelatin at 37° C., will develop well-marked capsules in 24 hours.

Diagnosis.—A most careful study of the physical signs in lobar pneumonia is given by Conner and Dodge[3]. These observers summarize the views of others as to the signs in the first stage (engorgement) as follows :—

1. Those who recognize no significant change in the breathing of the first stage, and who regard the crepitant râle as the only characteristic sign of the beginning of pneumonia.

2. Those who believe the breath sounds are usually abnormally harsh or "puerile."

3. Those who find that the diminution in strength of the vesicular murmur is the usual sign.

4. Those who believe that the breathing is appreciably altered in most cases, but who think that it follows no constant rule, and may be either diminished or "puerile."

Their own observations are made on 124 cases coming under treatment before bronchial breathing was present. They noted that diminished breath sounds were usually the first alteration, probably beginning within 24 hours of the onset of the affection. This feeble breathing usually appeared before any impaired resonance, but only a few hours ; both feeble breathing and impaired resonance appeared before bronchial breathing, feeble breathing being present, often one to two days, rarely four to five days, before bronchial breathing. They explain this feeble breathing by pointing out that the lung at this stage is enlarged and stiffened by engorgement, and also that breathing is painful—both causes tending to the same result, viz., diminished movement. With regard to crepitations, they were found in 85 per cent of cases, and were definitely of the "crepitant" variety in 50 per cent.

A summary of their conclusions as to the signs in the first stage are :—

1. A circumscribed area of feeble, indistinct breathing as compared with the breathing at a corresponding point on the other side (with the patient, if possible, in a sitting posture).

2. A circumscribed area of impaired resonance, with or without a tympanitic quality, obtained under similar precautions.

3. The crepitant râle.

4. A slight increase in the intensity and clearness of the vocal resonance.

The signs of the second stage are more definite. They noted that the bronchial character of the breathing showed in expiration before (a few hours) inspiration. The time at which they noted the appearance of bronchial breathing is as follows :—

1st day	.. .. 2 cases.	6th day	.. ... 9 cases.
2nd day	.. .. 14 ,,	7th day	.. .. 3 ,,
3rd day	.. .. 19 ,,	8th day	.. .. 5 ,,
4th day	.. .. 30 ,,	11th day	.. .. 1 case.
5th day	.. .. 15 ,,		

There were four cases of undoubted pneumonia in their series which never showed bronchial breathing at any time, but they do not think this fact is explained by the supposition of the presence of what has been called a "massive" pneumonia (i.e., tubes as well as alveoli plugged with exudation), because they never observed such a condition in any of their 40 autopsies. With regard to resolution, they give a table showing the relation of the disappearance of bronchial breathing to the defervescence:—

Disappearance of bronchial breathing before defervescence	39 times	..	20 per cent.
On day of ,,	25 ,,	..	12 ,,
1 day after ,,	28 ,,	..	14 ,,
2 days after ,,	19 ,,	..	9 ,,
3 ,, ,, ,,	22 ,,	..	11½ ,,
4 ,, ,, ,,	22 ,,	..	11½ ,,
5 ,, ,, ,,	14 ,,	..	7 ,,
6 ,, ,, ,,	7 ,,	..	3½ ,,
7 ,, ,, ,,	3 ,,	..	1½ ,,
More than 7 ,,	20 ,,	..	10 ,,

"Delayed resolution"—which they define as signs remaining for two weeks or more—occurred in 30 cases out of 199. Some defervesced by crisis, others by lysis, but all alike showed little if any redux crepitation. They do not feel sure that what has been described as "central" pneumonia really exists, or at any rate other than very seldom. They acknowledge having four cases which suggested "central" pneumonia, but conclude that: "Without venturing an opinion as to the absolute frequency of 'central' pneumonias, we nevertheless believe them to be much rarer than is popularly supposed, and we believe also that the comparatively frequent cases of marked delay in the appearances of the signs of consolidation, are cases not of a centrally-situated consolidation slowly working to the surface, but rather of slow progress from engorgement to complete hepatization."

Bovaird[4] points out the almost constant value of the change in pulse-respiration rate in diagnosis. He recognizes the difficulty frequently arising in diagnosis between pneumonia and such diseases as meningitis and appendicitis, because of the head symptoms and abdominal signs so commonly occurring in pneumonia. Slight abdominal distension he looks upon as the rule, and when it is a marked feature regards it as a very grave sign. The reviewer agrees that abdominal distension is of grave import; it should always be looked for as it impedes the breathing and throws much more work on the heart, which in pneumonia it is so important to spare. Williamson[5] also draws attention to the frequency with which pneumonia commences with severe abdominal pain, so that it may simulate appendicitis, gastric ulcer, biliary or even renal colic. [N.B.—We have all seen cases admitted, and a few operated on for appendicitis]. Udolfo[6] believes that the cause of this is referred pain, due to some connection between the nerves supplying the respiratory area concerned and

that of the appendix. Further, that one may have abdominal symptoms from fever or toxæmia, or as a reflex to inflamed lung or pleura, through the sympathetic or intercostal nerves. Many have tried to explain the pathogenesis of the crisis of pneumonia. Tchistovitch[7] comes to the conclusion that phagocytosis is the principal factor in the process. An active leucocytosis is an almost constant feature in a favourable case. He thinks that phagocytosis assumes a more active character in these cases by the appearance in the blood of the stimulins; whilst agglutinins, antitoxins, and other depending bodies only play a secondary part.

A delayed crisis generally means that there is some complication. In children, and young and vigorous patients, a persistence of temperature, and also of physical signs in one spot, should lead us to explore with a needle, as it generally means that an empyema has formed. It is well, however, to give old or debilitated patients a little longer, as their consolidations certainly take longer to undergo resolution.

Parsons[8], speaking of pneumonia in infants, emphasizes the importance of distinguishing between catarrhal and croupous pneumonia, because of the better prognosis in most cases of the latter. He gives: Sudden onset, massive consolidation (especially of right apex), continuous temperature, tachypnœa rather than dyspnœa, or, at any rate lack of bronchitic signs; absence of cyanosis and recession, as the distinguishing features of the croupous form, but allows that it is often impossible to make a certain diagnosis, and states that in some cases the two forms are found in the same lung.

Prognosis.—Dawe and Austin[9] give an useful report of 70 cases of lobar pneumonia. They conclude that the prognosis is good in youth, grave in old age, whilst in middle life it depends almost entirely on the condition of the other organs. Out of 70 cases, 32 died, (over 45 per cent), and the average of the dead was 51. Of those who died under fifty years of age, only 2 had other organs healthy—(15 died: 10 had other organs diseased, 2 chronic alcoholism, and 1 chronic plumbism). They do not consider that delirium increases the gravity, nor do they think that double pneumonias are more fatal. They look upon the pulse rate as by for the most important consideration in arriving at a prognosis. They fix on 120 a minute as the maximum (in the adult), above which they saw but few recover, and below which most cases got well.

Treatment.—The various schools of treatment may, roughly, be divided into:—

1. Those who would leave everything to nature, believing all interference useless or even harmful.

2. The specific school, those who treat every case on the same plan, frequently with one remedy only, regarding that particular remedy (or plan) as a specific, and many of whom push their particular hobby to an almost dangerous extent.

3. Those who wait until a patient shows urgent or definite symptoms which they will then try to relieve, whereby they often lose golden

opportunities, which in such cases generally come early in the case and never come again, and also lose sight of the malady *as a whole*.

4. Those who advocate very active measures being taken to treat a disease of such severity; believing that early measures are most important, and that it is extremely bad policy to wait until something *must* be done, by which time the possibility of giving relief or averting a calamity may have passed.

The reviewer agrees with Dr. Ewart[10] in deploring the hopelessness of doing nothing, and the harm often accruing from pure expectant treatment, quite as much as the reckless and often harmful interference of meddlesome medicine. While admitting that some cases will die in spite of all that can be done, and others will get well without any help, yet there is a middle class of cases, which would not get well without help, and in which appropriate treatment is successful.

The dangers in a case of pneumonia are: (1) Toxæmia; (2) Cardiac failure; (3) Failure to limit pulmonary exudation; (4) Failure to absorb the same; (5) Supervention of complications.

For Lessening Toxæmia.—Most of the plans we have, savour rather of depletory methods. Thus we have diaphoresis, diuresis, catharsis, local and general blood-letting, saline infusion, (rectal, intra-venous or subcutaneous), and oxygen inhalations.

It is most important to remember that if we are going to do good by bleeding, diuresis, catharsis, etc., we must begin early. It is wrong to delay, on the plea that the patient, at present, needs no help, because when he has reached the stage of needing help, it will be too late to use these most valuable, but still depletory, remedies. Moreover, if the toxæmia is kept down by promptly promoting its increased elimination in the ways indicated, the exhaustion, begotten of toxæmia, may be prevented.

Cardiac Failure.—It is well to remember the various causes of heart failure in pneumonia, and try to prevent the onset rather than simply use cardiac stimulants.

As causes you have: (1) Toxæmia; (2) Increased resistance to pulmonary circulation by the consolidation; (3) Abdominal distension, so common in pneumonia; (4) Constant pain or cough; (5) Restlessness, sleeplessness—active delirium.

Abdominal distension is a much more fruitful cause of cardiac failure than is supposed. Consideration of diet—limitation of milk, avoidance of aërated waters and the carbonates, and the free evacuation of the bowels are preventive measures to be remembered, whilst active measures by enemata, etc., may be necessary.

In the treatment of restlessness, sleeplessness, etc., we are face to face with the most difficult problem we have to solve in this matter. During the first few days it is well to get sleep, artificially if necessary, because there is usually no danger, at that stage, in doing so—but later, when it is more often necessary, the advisability must be carefully weighed. There is no doubt that some cases wear themselves out for want of sleep; and that many such are so refreshed by a few

hours sleep that they never show another bad symptom. The cases in which it is dangerous to induce sleep are: (1) In cases of marked cardiac failure; (2) Where there is much bronchitis, with copious secretion in the tubes, especially if cyanotic; (3) Where œdema of lungs is coming on; (4) Where there is chronic renal disease. The treatment of delirium must be guarded by the same reservations.

Limitation of Exudation.—There seems no doubt that by active treatment on the lines of leeching, wet and dry cupping, and blisters, we may be successful in limiting the extension of the pulmonary affection, if we get our cases early enough. The drugs which have been most recommended for this purpose are **Potas. Iodid.** and **Alkalies** for their recognized power of promoting fluidity of blood. Enormous doses of the iodide have been given, in these cases, in America (as much as 3000 grs. daily). For a similar purpose (to increase fluidity of blood) a low diet with plenty of fluid (watery) to drink has been recommended.

Stimulation.—If in spite of preventive measures, the heart begins to fail it becomes necessary to choose a stimulant. Some prefer to give **Alcohol** or **Digitalis** from the first in the way of prevention; others feel that digitalis should not be given till it is necessary, and that alcohol should not be used till after the crisis, as it tends to delay both crisis and resolution.

The reviewer feels *with regard to alcohol* that its early use is harmful, because: (1) It is not needed then; (2) It often robs the patient of desire for nourishment; (3) It often causes excitement and want of rest; (4) It often upsets the stomach and gives rise to abdominal distension and all that that means.

Strychnine, on the other hand, causes none of these troubles. It can be given early for: (*a*) it keeps the respiratory centre awake; (*b*) it is a tonic to the general nervous system; (*c*) it is potent to prevent abdominal distension, and is a profound cardiac stimulant. **Oxygen,** too, should be used early, as it is both directly and indirectly a cardiac stimulant.

Digitalis is much used, and one thinks one has seen a good number of cases saved by its timely use. But one also sees, at times, great stomachic disturbance from this drug.

In the case of strychnine and digitalis, it is doubtless often quite useless to give them by the mouth, as the stomach is incapable of absorbing them; one has frequently seen the most beneficial effects by giving these remedies under the skin, after their administration by the mouth had proved quite useless.

Serum Treatment.—Many cases are reported as having benefited by its use. Knauth[11] reports seven cases treated by injection of a **Polyvalent Serum** (obtained by the use of various cocci cultures) with most satisfactory results. De Renzi[12] is also favourably impressed with its use. Its use is handicapped by the fact that each individual breeds his own particular strain of pneumococcus, and the cocci from which the serum was made, not being the same, it does not seem likely

that good should result. It has been attempted to overcome this difficulty by using many different strains of cocci in making the serum, and all the good results reported have been from the use of this polyvalent serum.

Others are working at serum therapy on different lines. It has been shown that the phagocytes are all powerful in combating the disease: and also that phagocytic action is stimulated by certain bodies produced in the blood in disease. These workers now have prepared a vaccine which has the power of stimulating (or enabling) the phagocytes to take up a larger number of the invading micro-organisms and so diminishing the virulence of the disease. (Wright's method[13].)

The whole subject needs further investigation and extended trial, but it would seem likely that either method (considering the individuality of the pneumococcus) will be found more useful in cases of the prolonged or chronic manifestations of pneumococcal infection, such as empyema, arthritis, and the like, because it is necessary to manufacture the vaccine from the patient's own germ, which process takes ten to fourteen days.

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"POTATO" TUMOURS OF THE NECK. *Priestley Leech, M.D., F.R.C.S.*

In 1888 Mr. Jonathan Hutchinson gave an account of some instances of a peculiar growth springing from the upper third of the anterior triangle of the neck. These are endotheliomata, as described by Reclus and Chevassu[1], and take their origin from the carotid gland. Gilford and Davis[2] report three cases of this kind of tumour. There appear to be two kinds of growths in the neck. One group, first described by Volkmann, is believed to originate in remnants of the branchial arches, and has been given the name of "branchioma." There are two classes of these tumours, (*a*) Growths coming from the inner part of the arch and forming mixed tumours, partly epithelial, and partly endothelial in structure, and (*b*) Growths of a purely epithelial type, starting from the external layer. They grow between the mandible and the hyoid bone, or below the parotid gland and in the region of the sterno-mastoid muscle above the os hyoides; they spread over the common carotid artery and its branches, but do not penetrate its sheath or infiltrate the vessel. They are prone to recur after removal. The other tumours of the neck are endotheliomata, which grow from the "carotid" gland. They also grow under the sterno-mastoid, but lower down in the neck, and are connected with the carotid at a point where the internal and external branches bifurcate. The carotid body or gland, as described by Marchand[3], is of the size and shape of a grain of rice, and is situated within the fork of the bifurcation

of the two terminal branches of the common carotid. It reaches its full development and permanent size in the sixth month of fœtal life. Its anatomy somewhat resembles that of the hypophysis cerebri; it is glandular, contains no ducts, and though it contains many nerves is not a ganglion; it is a mesoblastic structure, and its development is closely associated with that of the carotid artery. These growths are probably more common than are supposed, and are, as a rule, looked upon as tubercular, lymphomatous, or malignant glands. The best treatment is complete removal at the earliest possible date, and having regard to their origin it may be asked whether the patient should not be advised to take the risk of having the carotid artery removed with the growth. This would add to the risk, but the gland is so intimately connected with the artery that it seems impossible to completely remove it without removing the artery. If the artery is to be removed it would be more likely to succeed if a temporary ligature were placed round the carotid artery a week or so before the removal of the growth, in order that a sufficient blood supply to the cerebral centres may be safely ensured beforehand. Notes are given of the three cases; one was too far gone for operation, and one died a week after removal, from the effects of tying the carotid; in the other case the tumour was widely removed, but recurrence nevertheless took place in about six weeks.

References.—[1]*Bull Méd. Soc. de Chir. de Paris*, No. 18. 1903; [2]*Pract*, Dec. 1904; [3]*Virchow's Festschrift*, Vol. 1, 1891, p. 537.

PREGNANCY (Disorders of). *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*
Victor Bonney, M.S., M.D., B.Sc., F.R.C.S.

Pernicious Vomiting.—Martin[1] has lately reviewed this important subject, and Stevens[2] in a critical essay has done the same. It is a curious thing that although in many directions our knowledge of the pathological side of obstetrics has made great strides, yet on this important subject but little advance has been made.

Stevens points out that four theories have been broached to account for it: (1) A reflex from the pelvic organs; (2) A neurosis; (3) A stomach reflex; (4) The intoxication theory. The latter hypothesis is that most favoured to-day; perhaps because the much better supported view that eclampsia has such an origin, has been naturally extended to cover the other grave complications of pregnancy. Indeed there are those who suggest that pernicious vomiting, chorea, acute yellow atrophy, and albuminuria are not only all toxæmic in origin, but are actually different manifestations of the same toxin. The convenience of such a theory is obvious, but the arguments against its adoption are too many to lead to its general acceptance.

The ordinary practitioner, however, is less concerned with etiology than with treatment: and here, unfortunately, we are no further advanced than with the more academic side of the ubject. A review of the papers alluded to, and our own personal experience, all tend to a sense of the desirability for early induction of abortion in these cases.

Fatal results are almost invariably due to delay in the carrying out of this measure. As with albuminuria, the time of election for this procedure is in the early days of the disorder, when we can at all events insure one life. It is sometimes a difficult and anxious matter to decide the exact time for interference; but of the two extremes, early interference is less harmful than the procrastination that too often over-reaches itself.

Albuminuria and Eclampsia.—In no province of obstetrics, perhaps, has so much work been done as on the causation of this grave disease, but whilst great light has been thrown on its pathology, and much improvement manifested in the methods of its treatment, complete knowledge is still far off.

Comyns Berkeley[3] has contributed the most exhaustive review of the subject that has appeared of late years. His paper is too long to give in detail, but we commend it to our readers. It is divided into two sections: pathology and treatment. Whilst our knowledge of the etiology of the disease is imperfect, our treatment must in some respects partake of empiricism. That the modern attitude of thought as to its causation is in the right direction, is supported by the improvement in results which accrue from methods of treatment designed on the basis of the "toxæmic" theory. According to this view the disease is due to some toxic substance in solution in the maternal blood. On the probability of this being correct, all authorities are agreed; but the site of its production is still a matter of vigorous debate. It has been variously assigned to: (1) The kidneys; (2) The liver; (3) The intestines; (4) The fœtus; (5) The placenta; (6) The maternal thyroid. Of these the last two appear to be in most favour at present.

The most recently enunciated view is due to Nicholson, who, acting on work published by Lange, suggested that an insufficiency of iodothyrin, due to want of a normal pregnancy hypertrophy of the thyroid gland, was the main factor of its production. In proof of this a number of cases successfully treated by the administration of **Thyroid Extract** in full doses have been published. That a normal hypertrophy of the thyroid does occur in pregnancy is not yet certain, however, and there is an absence up to now of reliable observations on the thyroids of women dying of eclampsia.

On the other hand, Liepmann[4] made experiments which tend to show that the placenta of eclamptic patients contains some toxic substance capable of producing death when injected intra-peritoneally into rabbits. Hitschmann[5] records a very interesting case of eclampsia associated with vesicular mole, without a fœtus, whilst Peham[6] reports a case of eclampsia and extra-uterine pregnancy. On the whole this part of the subject must be held to be in a very unsettled state.

As regards treatment, two methods have risen into chief prominence lately.

Firstly, **Thyroid Extract** as advised by Nicholson. He gives it in 40-grain doses until signs of thyroidism appear, and claims good results. He is supported by the published results of others who have

copied his treatment. It is undoubtedly a method worthy of extended trial, although we are bound to say that a perusal of the reported cases leaves a degree of doubt in our minds as to whether or not the reported improvement was in reality due to the drug. Of course it does not follow that thyroid extract need be useless even if the assumption of a want of development of the thyroid gland has no basis in fact; at the worst the treatment apparently does no harm, and for this reason alone trial is to be commended.

The second mode of treatment is an old one revived, namely, **Forcible Dilatation of the Cervix.** The introduction of the steel dilator, designed by Bossi, into more general use has naturally led to a more frequent application of the method of *a couchement forcé* to these cases. As a routine treatment in cases of eclampsia, it is, we think, to be wholly condemned. Forcible delivery is of all things to be avoided if possible when the condition of the mother is grave, since it brings with it a very considerable degree of shock, which may precipitate the fatal end. Nevertheless we think that in certain cases remote from term, in which marked trismus of the cervix is present, this is the justifiable mode of treatment. Of course such cases are likely to terminate fatally, do what one may; but it is nevertheless undesirable to allow the patient to die undelivered.

There can be no doubt that before resorting to operative treatment, the patient should in most cases be subjected to the full gamut of the more approved palliative measures, such as **Hot-air Baths, Morphia, Saline Venous Infusion,** and (with cyanosis) **Bleeding.** Having got her under the ameliorating influence of these procedures, the emptying of the uterus can be effected more leisurely (as by the Champetier's bag, etc.), and therefore with a more favourable outlook.

It cannot be denied that the fatal cases are those which, often from unavoidable circumstances, have been neglected. Induction of labour, to give the best results, should be carried out early in the stage of albuminuria. Complete success can then be assured as regards the mother. Seeing that the disease is one of primiparæ, and is rare with subsequent pregnancies, early induction, in the hopes of a more successful issue next time, is undoubtedly the best line of treatment. Unfortunately the "latent" stages of the disorder are too frequently overlooked. This fact emphasizes most strongly the necessity for frequent routine examination of the urine of primigravidæ.

In conclusion one may mention that Edebohls warmly advocates **Renal Decapsulation** in eclampsia, as he does in other forms of so-called "nephritis." Evidence is not sufficient yet as to the results obtained by this treatment to warrant one making any useful criticism on it.

Accidental Hæmorrhage.—In no branch of obstetrics has professional opinion undergone so complete a change as in the treatment of this, the most serious accident that ordinarily befalls pregnancy. This is entirely due to the so-called "Dublin school," who, by bringing the advantages of **Vaginal Tamponage** before the notice of their *confrères* in England, deserve no small praise. Almost up to the present time

the suggestion at an "examination" of plugging the vagina in accidental hæmorrhage, would have endangered the success of the rash candidate who made it. It was alleged that plugging converted an external into a concealed hæmorrhage, thereby still further distending and paralysing the uterus, and thus encouraging the bleeding.

To Sir William Smyly belongs the credit of reviving the method of vaginal tamponage, and demonstrating not only that the dangers said to attend it were non-existent, but that it was actually the best method of treatment in these cases. He has been followed by most Irish authorities, and their united evidence in favour of vaginal tamponage has been ably summed up by Sir Arthur Macan[6]. The method advocated is briefly as follows:—

The patient, having been placed in the lithotomy position, and all clots cleared from the vagina, tampons are tightly packed in by the help of a speculum until the passage is quite full. An abdominal binder is now tightly applied, and the operation is completed by a perineal bandage, which, passing between the patient's thighs, is firmly fixed in front and behind to the abdominal binder. The uterus is thus forced down upon the vaginal tampons, which are rendered rigid by the perineal bandage.

The advantages claimed for this procedure are: (1) That it checks the hæmorrhage; (2) That it allows time for the patient to recover herself; (3) That it excites uterine contractions; (4) That therefore delivery is followed by no risk of post-partum hæmorrhage; (5) That it spares the patient the shock of rapid delivery; (6) That its performance is easy.

These are weighty advantages, and if even the first of them be true, places this treatment far ahead of all others. But does it check the hæmorrhage? It undoubtedly does so in external accidental hæmorrhage, and these form the commonest class of case. In the case of concealed accidental hæmorrhage, however, its effect is not so beneficial, and Sir A. Macan and his colleagues do not advocate its use so strongly in this emergency.

Let us see how it compares with the methods which up to now have been in vogue. These are two: (1) Rupture of the membranes; and (2) Artificial delivery.

1. Concerning the first, **Rupture of the Membranes**, the Irish obstetricians say that, far from promoting retraction of the uterus and so bringing about cessation of the hæmorrhage, it actually promotes bleeding by the sudden lowering of intra-uterine tension which occurs with the escape of the liquor amnii. That this must be so in bad cases, in which tonicity of the uterine wall is absent, seems obvious; and it is surprising that so simple a physical fact should have escaped notice so long. As a method of bringing on labour, rupturing the membranes is about the worst, so that even its performance to attain this end is ill justified.

2. Artificial delivery may be divided into (*a*) the slow, and (*b*) the rapid methods.

(*a*). The slow methods, such as the use of **Tents, Hydrostatic Dilators**, etc., have as their chief disadvantage the possibility that the patient may bleed to death pending delivery.

(*b*). The rapid methods, such as **Manual Dilatation**, followed by internal podalic version, or the use of the steel dilator, such as that of Bossi, have still greater drawbacks. The shock of rapid delivery in persons already exsanguined is always severe. Probably the sudden drop in intra-abdominal tension, which follows the reduction in size of the uterus, determines the blood into the great abdominal veins, thus practically "bleeding" still further the already blanched patient. In all the graver complications of pregnancy, there is nothing so much to be desired as the absence of necessity for suddenly emptying the uterus. True, it is sometimes forced upon the obstetrician; but it is to be avoided if there is any possible alternative, and this is particularly true of accidental hæmorrhage. No one who has had practical experience of the results of forced delivery in cases of ante-partum hæmorrhage can help being impressed with the fact that the fatal issue is finally determined by *delivery*. In other words, death scarcely ever occurs *before*, but almost invariably within an hour *after* the birth of the child, even though parturition may have been accomplished without any further loss of blood.

A critical consideration of these facts will entirely support the advocates of vaginal tamponage in all cases of external accidental hæmorrhage. Having plugged the vagina in the manner indicated, our efforts should be towards improving the tone of the patient, both generally and locally (the uterus). **Ergot** should be given primarily for its effect on the uterine muscle, but evidence goes to show that it is also a valuable drug in all kinds of vasomotor shock, since by raising the tension in the peripheral vessels it tends to keep the heart full. **Saline Solution**, administered either by rectum or by subcutaneous or intravenous injection, is most valuable, together with the usual restoratives for sudden and profound anæmia. The patient having recovered herself, natural labour may be looked for within twelve hours, and often in a much shorter time than this.

In *concealed accidental hæmorrhage*, the case is somewhat different, since vaginal tamponage at first sight cannot reasonably be expected to naturally alter the conditions under which the bleeding is taking place. The greatest drawback to its use appears to us to be the inability to make a certain diagnosis without introducing the hand into the uterus; and again, the extreme tenderness and rigidity of the abdomen preclude the possibility of making efficient pressure on the uterus. In such cases, then, some form of **Rapid Delivery** seems forced upon us. The method most commonly practised is manual dilatation followed by internal version, because in these disasters the cervix is invariably relaxed with the rest of the uterine musculature, and dilatation is easy. An alternative to this proceeding is the use of Bossi's or some other form of steel dilator.

Recently two other methods have been carried out in such cases,

namely, **Vaginal Cæsarean Section** and **Abdominal Hysterectomy.** But although successful results have been attained by these operations, the number performed is too small at present to judge of their true value. It is obvious that they are formidable undertakings to carry out on a patient already moribund from hæmorrhage; but we have to consider that we are dealing with a desperate class of case.

The most enthusiastic upholders of vaginal tamponage believe that even concealed accidental hæmorrhage may be controlled by it; but evidence on this point is wanting. In short, whilst there can be no doubt as to its claim for priority of consideration in the treatment of external hæmorrhage, the question as to what really constitutes the best treatment for concealed hæmorrhage is yet in the balance.

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PROLAPSE. (*See* Rectum *and* Uterus.)

PROSTATE (The Enlarged). *E. Hurry Fenwick, F.R.C.S.*

Etiology.—Bolton Bangs[1] expresses his views on the causation of the enlarged prostate in the following terms:—

"Long ago John Hunter advanced the theory that prostatic enlargement was of inflammatory origin. His experiments upon the lower animals were corroborative of this, but in the course of time his views were entirely overlooked, and various other theories, some of them ingenious and plausible, were advanced. But none of them satisfied the scientific mind. Virchow, in his noted work upon 'Krankhafte Geschwülste,' in 1863, reasserted the belief that the process was an inflammatory one, beginning, as a rule, in the glandular parts of the gland, and extending thence to the stroma. This view was not supported by any extensive histological investigations, and did not receive the attention it deserves. But recently, i.e., within a few years, more positive scientific work has again brought to the front the inflammatory origin of enlargement of the prostate. The French view, that enlargement of the prostate is a senile process, due to general arteriosclerosis, and that even when it occurs in the comparatively youthful, it is a state of 'pre-senility,' has, in Bolton Bangs' opinion, been disproved, and does not need to be considered. The inflammatory theory appears to be the one which accounts for the onset of this malady, which explains the changes in the gland, and which has the most and strongest evidence in support of it.

"It has been shown that the enlargement is histologically a proliferation (in many cases to an immoderate degree) of the constituent elements of the prostate, the various forms which the gland assumes being due to the location and degree of the proliferation. According to Ciechanowski's opinion, the different forms of prostatic hypertrophy are difficult to differentiate. They are one and the same thing. His investigations point to the conclusion that any division of hypertrophy

of the prostate into different forms and subdivisions is forced and unjustified, and that the so-called (pseudo- or fibro-) adenomata of the prostate are due to accumulations within the acini of the gland. The order of events, according to his view, is as follows: A catarrhal process occurs in the acini, producing active proliferation, desquamation, and degeneration of the epithelium; at the same time a productive change takes place in the stroma, which compresses the excretory ducts of the acini, narrowing or obliterating them. The latter prevents the escape of the contents, the secretions accumulate within the acini, and the lobules enlarge. Occasionally a suppurative process is added, abundant leucocytes being added to the excretion of the gland. The enlargement of the lobules, due to increase of connective tissue elements, is quicker and of higher grade if the excretory ducts are numerous and nearer the obstacle. The enlargement of the lobules is also greater according to the extent and intensity of the endoglandular process always present. This view of Ciechanowski has been confirmed and supplemented by Greene and Brooks, in their article on 'The Nature of Prostatic Hypertrophy,' which is well worthy of careful study.

"The insidious nature of this inflammatory process is unquestioned. It may be latent for years, with no symptoms to attract attention, until the data upon which to base a diagnosis of prostatitis have entirely passed from the patient's memory. According to histological examinations, the point of origin seems to be in the prostatic urethra, extending thence along the gland ducts from the urethra towards the periphery of the prostate, the round-celled infiltration being most marked in the vicinity of the verumontanum. The latter statement is, in my opinion, of importance. In examining persons who have come to me in adolescence or early manhood, I have been struck with the excess of sensibility appreciated when the location of the verumontanum is touched during the process of the examination, and with the hyperæmia of this little organ when viewed through the urethroscope. This I have found most marked in masturbators and in those who have practised *coitus reservatus* or *coitus interruptus*, and in those who have committed sexual excesses, even if the sexual act has been done normally. This led to the question, 'May this be the starting-point of chronic prostatitis?' Although I have been unable to verify this statement by any personal histological investigations, the statement of Ciechanowski in respect to the preponderance of inflammatory elements in the neighbourhood of this subdivision of the prostate is, to my mind, of considerable importance. The anatomy and physiology of the prostate are peculiar and distinct from any other organ of the body. It is subject to what I might term voluntary engorgement, and which, induced frequently, according to the temperament of the individual, easily renders it liable to infection and to the tissue changes which we call inflammation. Hyperæmia of this organ stimulates the sexual nerve centres, which in turn react upon the prostate, and sexual activity becomes aggravated. Thus, in some individuals, sexual craving becomes excessive, and no amount of good sense or philosophy can

control it. The brain and prostate reciprocate in their effect upon each other, and the subsequent tissue changes in the latter take place in response to excessive nerve stimuli. From the age of puberty onward this is liable to occur, and the man who escapes without some damage to his prostate may well rejoice.

"In my opinion, hypertrophy of the prostate is not a senile disease. It begins in early manhood. It is present when least suspected. The changes in the prostate are coincident with the active life of the testes and vasa deferentia. The late phenomena of urinary difficulty and obstruction are often preceded by symptoms of irritation of the prostate and neck of the bladder, which are purely congestive in their nature, but are the shadows of coming events, the prodromes of the conditions which eventually produce the more or less severe grades of insufficiency of the bladder. These phenomena do not appear in any intensity until after the age of 45 or 50, but their beginning is at the time of life when the individual is in the active exercise of his sexual functions, and when all the structures of his body are at their highest capabilities. Such considerations as these long ago led me to appreciate that the mode of life of the individuals presenting themselves with enlarged prostate had much to do with the origin of their malady. This further led to careful, persistent, and tactful cross-questioning of each individual, with the object of developing his sexual life from boyhood onward. The material for this study has not been limited to persons of any one class of society. All grades, the refined and the vulgar, the trained mind and the untrained, have furnished the material. A careful analysis of three hundred such histories of persons with unmistakable enlargement, who have been under my personal observation, shows that over 85 per cent of these persons were subjects of abnormal or unphysiological sexual indulgences, which were excessive in degree and continued for years. In the 15 per cent remaining, in which no history of sexual aberration was present, the primary prostatic congestion was apparently due to a derangement of the portal circulation, due to a sedentary life or to excessive eating and drinking.

"My claim is that the over-active and unphysiological—especially the latter—exercise of the prostate precedes, finally excites, and then prolongs the inflammatory irritation, which eventuates in the recognized tissue changes. Therefore I am satisfied that something else besides gonorrhœa is necessary (certainly in a large proportion of the cases) to induce enlargement of the prostate. I believe that if a man, even if he has been infected by gonorrhœa, will lead a normal, physiological existence, especially as relates to his sexual apparatus, he will never have that condition, with all its attendant and consecutive phenomena, which we call enlargement of the prostate.

"From the foregoing a few simple prophylactic rules, which seem reasonable and logical, may be deduced: (1) Sexual instruction in boyhood; (2) Chastity in youth; (3) Sexual self-restraint in early manhood, and (4) Physiological sexual relations in the married state."

Churchman[2] discusses the unsatisfactory status of the above question. Early theories have one by one been abandoned. Among them was Home's, that prostatic hypertrophy was due to the disadvantageous position of the veins of the bladder, congestion of these veins tending to produce the condition in question. Wilson attributed it either to celibacy or venereal excess; Bell to predisposition and vesical irritation; Samuel Cooper to a sedentary life; Astley Cooper and Brodie to physiological changes; Gross and Mercier to anything which caused habitual prostatic engorgement; Amussat to syphilis; Desault to gonorrhœa; Civiale to calculus and stricture; Sir Henry Thompson and Velpeau to neoplastic changes similar to the fibromyomata of the uterus. Guyon and Lannois regard it as part of a general senile change associated with genito-urinary sclerosis. Ciechanowski, in 1896, demolished all these theories, and affirmed that changes in the stroma were adequate to explain all phenomena, and these were due to a proliferative connective tissue process. Localized in the central parts of the prostate they might cause narrowing or obliteration of the lumen of the main excretory duct, with consequent accumulation of secretion and enlargement of the peripheral lobules. If they occupy mainly the periphery, and the vicinity of the terminal branches of the tubules of the acini, prostatic atrophy will result. In other words, the condition is essentially a chronic inflammatory process. This view has been accepted by various pathologists after careful work upon the living and the dead. In the majority of cases it is believed that the original infection was gonorrhœal. Rothschild studied the histological changes in the chronically inflamed prostate, and found that Ciechanowski's account of its pathology harmonized with it, as well as with Finger's account of the pathology of gonorrhœa, and concluded that the beginning of the disease was in youth, years before the gland begins to enlarge. His conclusion, in brief, was that prostatic hypertrophy is a later manifestation of prostatic inflammation, and was most frequently a *gonorrhœa tarda*.

Keyes, on the other hand, thinks the clinical evidence is against rather than in favour of the inflammatory theory. Of more than 400 cases of enlargement of the prostate analysed by him less than 5 per cent showed clinical evidence of previous prostatitis. Another series consisted of 54 cases of posterior urethritis between the ages of fifty and eighty-three years, and in these there was not a single case of prostatic hypertrophy. In a third series of 2164 cases of all kinds studied at their fiftieth year, 425 (19 per cent) showed prostatic hypertrophy, 71 gave a history of chronic prostatitis, of which 17 (24 per cent) showed prostatic hypertrophy. In other words, Keyes's analysis showed that the influence of a pre-existing prostatitis in causing the prostate to hypertrophy is not great; otherwise the urethritis cases would show a larger proportion of hypertrophied prostates than the general cases. Evidently the pathological and the clinical findings do not agree; and the author observes that we are in need of clinical evidence based on the most

careful observations and cystoscopic examinations, and until these are obtained it must be admitted that it is improbable that early gonorrhœa causes the condition in question. On the pathological side it is necessary to exclude other causes of the inflammation, which may itself be an accompaniment or a sequel of the hypertrophy: such causes, for example, as catheterization, retained urine, and vesical calculus.

Operative Treatment.—In the *Annals of Surgery*[3] are published a series of original memoirs on the pathology and treatment of prostatic hypertrophy, reviewing the present aspects of the surgery of the prostate, and discussing the relative merits of the different surgical methods of dealing with this common disease. Careful study of these memoirs, many of which are from representative American writers, cannot fail to be profitable, as the subjects are regarded from different points of view, and are discussed in turn by the opposed advocates of rival methods of surgical intervention. The general conclusion will be drawn that, with regard to prostatic surgery of the present day, though considerable difference of opinion exists as to the best operative method, there can be no doubt that prostatic hypertrophy, in spite of its unfavourable associations with advanced age and general decay, may, with surprising freedom from serious risk, be brought within the range of radical treatment.

In this, as in some other branches of surgical work, there is a tendency in the advocates of thorough and radical methods to ignore or discourage older and less heroic alternatives to such treatment. Even many of those who are disposed to overrate the dangers of "catheter life" will hesitate to maintain, with L. S. Pilcher, that the use of this instrument should, in the light of present-day experience, be allowed rather under protest than as a measure recommended by the surgeon. That this view of the use of the catheter is not generally accepted in the United States is shown in a paper by Thorndike, who points out several conditions under which the catheter should not be thrown aside for procedures of a more radical kind, but should still be recommended and used. There is, however, throughout these contributions a predominant feeling of distrust of catheter treatment, which, in the opinion of Watson, of Boston, is attended by greater risk than prostatectomy. It is very evident that in the States, as on this side of the Atlantic, castration and vasectomy, and also incision of the prostate by the galvano-cautery, have ceased to retain the confidence of a large majority of practical surgeons. Amongst the few allusions to Bottini's operation, we come across a statement by Young that, whereas this is the simplest and quickest method for a limited number of cases, it is neither so safe nor so uniformly successful in relieving obstruction as enucleation of the gland.

With increasing trust in **Prostatectomy,** and an improved and simpler technique in the performance of this operation, there is, of course, associated a tendency to reduce to a minimum the number of contra-indications of such treatment. In this direction L. S. Pilcher goes so

far as to maintain as the indication for prostatectomy a degree of urinary obstruction interfering materially with comfort, or entailing notable disability. Great age, which, it is pointed out, is a very relative term, is not regarded in itself as a serious objection. Advanced renal disease is acknowledged to be a most serious complication ; but even this, it is held, need not exclude an attempt to give relief by a rapidly-executed suprapubic section for drainage. In cases of intense general depression due to physical suffering and septic poisoning, the general health and local disturbances may in this way be so far improved as to render prostatectomy after a time both possible and curative.

The modern treatment of the enlarged prostate by direct exposure and extirpation has evidently stimulated further study of the pathological anatomy and also of the objective diagnosis of the different forms of prostatic disease. The advocates of direct surgical attack on the hypertrophied prostate naturally attach much importance to a preliminary determination—so far as this may be possible—of the volume, form, and consistency of the enlarged and obstructing gland. In considering the indications and contra-indications of prostatectomy in a case of severe senile dysuria, it would certainly be well for the surgeon to remember the fact, pointed out by Chelwood, that the train of symptoms usually met with in prostatic hypertrophy may exist without any enlargement of this gland, and be really the result of quite another morbid condition, in which a serious cutting operation would be unnecessary. It is an open question whether rectal palpation, though often very useful in the diagnosis of prostatic disease, will in many cases enable the surgeon to distinguish the part or parts of the affected gland which cause the obstruction, or help him to select the most suitable method of operation. Young, of Baltimore, believes in the advisability of preliminary cystoscopic examination, and states that in this way alone he has been saved from making several serious blunders. In the concluding memoir Cunningham has done his best to give help in this direction by an elaborate description, aided by copious illustrations, of the technique of cystoscopic investigation in cases of prostatic hypertrophy. Most surgeons, however—even if they do not agree with Wiener that the cystoscope in such cases is not only an unnecessary but often a dangerous instrument, or with L. S. Pilcher, who also deprecates its routine use—will probably find a serious stumbling-block in the difficulties and uncertainty of this method of investigation.

The chief points of interest in these memoirs are the views of the different authors with regard, in the first place, to the supposed superiority of operative over milder and less heroic treatment in cases of enlarged prostate ; and in the second, to the relative claims of the suprapubic and perineal methods of prostatectomy. On the first question there is a general agreement that, as a rule, the risks of catheterism are as great as, and indeed even greater than, those of the thorough and radical treatment by enucleation of the gland. Even Thorndike, who still regards catheterism with favour, feels that it is

true that radical operations upon the prostate are superseding the catheter and other methods of the palliative field of usefulness. The second question is fully discussed, and as both the suprapubic and the perineal operations are favoured by American surgeons, we are afforded good grounds for forming an opinion of their rival merits. The suprapubic method, it would seem, has a wider range of application than the perineal in the United States ; for whilst the advocates of the former seldom if ever resort to the latter, those who practise the perineal method are less exclusive, and evidently recognize the fact that it is not applicable to all the varied and complex forms of prostatic disease.

Whilst recognizing the force of much that is stated by Pilcher and Young in support of perineal prostatectomy, the evidence as a whole tends to the conclusion that the suprapubic method presents many decided advantages. It is certainly a simpler procedure, and may be performed quickly—an important point in very old and exhausted subjects. Wiener assures us that he has not the slightest doubt that any prostate can be readily removed under nitrous oxide gas in a few minutes by the suprapubic operation. The prostate can be more freely and readily attacked by this method, and, consequently, there is a better chance of removing the whole of the diseased gland. The risk of laceration of the rectum is certainly less, and if the views of Ruggles on the cause of incontinence as a sequel to prostatectomy be correct, the surgeon may by care assure himself against the occurrence of this evil. Again, the conditions of wound healing, though far from perfect, must be more favourable with the suprapubic incision than in the large and deep perineal wound, necessarily exposed to more or less violence during the operation, and in close proximity to the anal orifice. The difficulties of the perineal operation to those not possessed of the skill and experience of Pilcher and Young must be great, and we think most surgeons who have done much perineal surgery will hardly agree with the former that in the method he so strongly advocates, the prostate can always be freely exposed and its enucleation effected under direct visual control. Some of the writers assert that the mortality of the perineal operations is smaller than that of the suprapubic method. This, however, is not supported by the scanty statistical information at present available. The tables published by Albarran, Young, and Pilcher show a death-rate of rather more than 5 per cent, after perineal prostatectomy, whilst those of Freyer show 5 fatal results in 107 cases of operation by the suprapubic route. The results of both operations are, it is reported, equally good, and, indeed, there can be no doubt that in a very large proportion of cases prostatectomy, whether suprapubic or perineal, is capable of removing the urinary obstruction, and of thus affording an immense amount of relief. It still remains to be determined whether the sequelæ, such as incontinence and persistent fistula, which occasionally mar these good results, are influenced by the method of operation, and whether they can be prevented by an improved technique.

Indications and Therapeutic Value of Prostatectomy.—Because of the

wave of surgical enthusiasm in regard to the operation of complete prostatectomy, incident to the greatly lessened mortality following improvement in technique and surgical cleanliness, there is some danger of forgetting that partial or complete retention of urine in men over forty-five is not always due to a true hypertrophy, meaning by this term an adenomatous overgrowth; that it is at times incident to a proliferating prostatitis caused by chronic inflammation, and associated frequently with spasm of the vesical neck. Albarran calls attention to the fact that this form of prostatitis may be observed at any age, even in young men. The symptoms are those of an insidious prostatic hypertrophy with moderate incomplete retention. In its progression the disease is slow. On palpation the gland is of medium size and of even consistence. It may be unduly soft. Sometimes nodules or irregularities are detected, and exceptionally the gland is extremely sensitive. In young people thus afflicted massage is curative. In those of more advanced age prostatectomy is usually futile, or gives only amelioration: at times it distinctly aggravates the symptoms.

Even in cases of true prostatic hypertrophy it must not be forgotten that with modern methods it is possible to practise **Catheterization** as frequently as may be needed without causing vesical infection, and without in any way impairing the health of the patient. This end is most easily attained in those patients suffering from moderate residuum, and in whom the vesical tonus is not seriously impaired. Such patients are subject to occasional attacks of complete retention incident to sudden congestion, but unless infection supervenes, or unless the residuum is steadily increasing, prostatectomy is the operation of choice rather than of compulsion. It should be remembered that infection is most likely to occur at the beginning of catheterization, and that at this time precautions against it should be most rigorous. Moreover, the systemic depression incident to infection is much more severe at first than in the later stages of the inflammation. As an argument in favour of the catheter, it is noteworthy that those cases do best after prostatectomy in which this instrument has been regularly used, and that those do worst in which, because of imperfect emptying of the bladder by voluntary effort, this viscus has become greatly dilated.

As to the choice of methods, it has been conclusively established that partial prostatectomy is unsatisfactory in its results, Louis and Burckhardt showing that not more than 31 per cent are cured, and that the mortality is as great as that of total prostatectomy.

Considering the route by which the prostate is removed, this operation can be accomplished through a **Perineal Incision,** or through an opening made **Suprapubically** into the bladder. A collection of 813 total prostatectomies (Proust) by the perineal route shows that 58 died, a mortality of a little over 7 per cent. In this tabulation every death occurring within a month of operation is counted as incident to surgical interference. Hæmorrhage, shock, and infection are all rare in this operation, and considering the class of cases in which it is performed,

it is fair to say that its immediate operative mortality shows it to be one of the safest operations of surgery. Deaths were usually due to cardiac, pulmonary, or embolic sequelæ, attributed with few exceptions to the depraved constitutional condition of the patients at the time of operation. Lesions of the rectum constitute a fairly common post-operative complication, resulting in recto-urethro-perineal fistulæ. Incontinence of urine and ultimate great difficulty in passing the catheter have also been noted. Some patients remain absolutely and permanently incontinent, and this is most likely to occur after removal of very large prostates. Secondary strictures are very rare. A light form of epididymitis is noted in from 10 to 30 per cent of the cases. As a result of the operation both ejaculation and erection are suppressed, and there is loss of sexual power, though Young's ingenious modification by which the half-inch of prostatic tissue containing the ejaculatory canals is preserved, offers a fair prospect of avoiding this sequel. The immediate results of the operation are the prompt subsidence of urinary fever and digestive disturbances. In cases of recent complete retention, preceded by a long period of partial retention, the bladder, even after prostatectomy, does not completely empty itself in about one-third of the cases. In those cases of long-standing chronic complete retention, however, in which the catheter has been used, the cure is usually complete. Very exceptionally there is a recurrence of symptoms after prostatectomy. As a rule micturition becomes easier with the lapse of time. As to the general effect of operation, it is as a rule rejuvenating.

Proust's collection of transvesical prostatectomy numbers 244 cases, with 29 deaths, a mortality of 12 per cent, distinctly larger than that of the perineal operation, due probably to deficient drainage, since there is a comparatively large number of fatalities from infection. The post-operative complications, however, are distinctly rare. Neither a wound of the rectum nor incontinence of the urine has been noted. Fistulæ are most exceptional, the epididymis does not become inflamed, and as a rule the patient remains potent. There was but one instance of subsequent cicatricial contraction of the vesical neck in the entire series, and the ultimate results seem somewhat better than those following perineal prostatectomy. Thus Freyer of 117 cases notes 97 complete successes, all of these patients having completely regained the power of evacuating the bladder contents.

When there is increasing residuum, especially when there is increasing vesical infection and signs of renal involvement, Proust holds that neither age, debility, nor pronounced renal degeneration constitutes contra-indications.

Though it might seem that in the perineal operation tearing of the rectum ought to be avoided, this has occurred so often in the hands of competent surgeons that it seems in some cases inevitable. It is explained on the basis that inflammatory adhesions have fixed the rectum to the prostatic capsule. As a rule immediate suture prevents the formation of a fistula.

Verhoogen had an opportunity of performing an autopsy in a case of

transvesical prostatectomy some years after the operation, and noted that the prostatic urethra was only 5 mm. long and that it was surrounded by a soft tissue which exhibited no contractile tendency. Hence he states that there need be no fear of subsequent retention, even though the prostatic urethra is torn away with the gland, holding that the vesical orifice practically becomes adherent to the membranous urethra.

Albarran has performed 66 perineal prostatectomies with only 2 deaths, while Pauchet of 43 operative cases lost 3, and Rafin of 32 cases lost 2. Legueu of 30 cases lost 3; he states that of those cured none exhibited perineal fistula, though 4 had rectal openings. In the majority of his cases the results were most satisfactory, though he notes that of eight patients suffering from incomplete chronic retention results were entirely negative, while the symptoms were even aggravated in 4; 2 were markedly improved, and 2 were practically cured.

Though it is clear from the now adequate number of reported cases that the complete removal of the prostate is an operation comparatively safe, promising under proper conditions brilliant results, it is also evident that there are cases exhibiting the symptoms of prostatic hypertrophy in which the use of the catheter is a safer and more efficient procedure than surgical intervention.

Ultimate results of Prostatectomy.—Young[4] discusses the ultimate results of conservative perineal prostatectomy on the basis of a series of 75 cases. Among these were 5 of patients over 80, and one of 87, with one death five weeks after the operation in a man aged 84 years. Two other deaths, neither attributable to the operation, occurred, each in the third week—one in a patient walking about and ready to go home, from pulmonary thrombosis; and the other in a man 77 years of age, who had been uræmic for several weeks, and autopsy showed double pyohydronephrosis. The innocuousness of the operation was thus shown. Young said the use of his double-bladed metal tractor was of great help in steadying the prostate for the incisions, drawing it down for a complete enucleation, enabling the operator to deliver and remove even large middle lobes without tearing away the mucous membrane of the bladder or urethra or the ejaculatory ducts. The advisability of preserving the floor of the urethra, the verumontanum, and the ejaculatory ducts in men whose sexual powers were well preserved (and these represented over 50 per cent of the cases) was shown by the impotence which followed in nearly all cases of operations like Albarran's and Murphy's, in which the floor of the urethra and duct were deliberately destroyed, and by the results obtained in these 75 cases, in which, in a large proportion of them, the sexual power and ejaculation were preserved, and even spermatozoa were afterwards present in these men. The preservation of the prostatic urethra intact did away with the necessity of post-operative passage of sounds, greatly hastened the closure of the perineo-urinary fistula (all urine passing through the penis after the sixth or eighth day in many cases), and was possibly responsible for the absence of incontinence and the early

establishment of normal urination. The frequent presence of epididymitis in Albarran's cases led to the routine ligation of the vasa deferentia in the groins after he had finished perineal prostatectomy by his method. The great rarity of testicle infection when the author's technique was employed showed, according to him, the advisability of not tearing away the terminal valve-like portions of the ejaculatory duct. The absence of mortality from the operation showed that the advantage gained by a nice exposure of the prostate by blunt dissection through an inverted V-shaped cutaneous incision, and proper traction of the prostate by means of an intra-urethral tractor, with the consequent ability to enucleate the lobes without *morcellement*, and the saving of useful and non-obstructive structures—prostatic urethra and ejaculatory duct—was well worth the slight addition to the length of the operation as compared with a blind "tear-out-what-will-come-out" technique.

After-treatment.—Freyer[5] deals in detail with the after-treatment of suprapubic prostatectomy, and thus contributes an article of considerable value for the practitioner left in charge of such a case.

The wound is covered with cyanide of zinc gauze and the patient deeply swathed in absorbent dressings—front, sides, and back. The whole dressing is kept in place by a broad flannel binder or many-tailed bandage, loosely applied. Cotton-wool, wood-wool tissue, or cellulose may be employed. The last is most absorbent and keeps the patient driest; but a thin layer of cotton-wool should be placed between it and the skin, otherwise the cellulose forms a pulp when wet, which adheres to the skin and feels cold and clammy. The dressings should be changed when saturated with urine, every four or six hours according to the quantity of fluid secreted. During the first twenty-four hours after operation there will generally be some clots of blood lying in the drainage-tube; these should be removed by long slender forceps at each dressing.

The bladder should be irrigated once daily, by the surgeon himself, with warm boracic lotion or a weak solution of permanganate of potash. For this purpose a long glass nozzle attached to the rubber tubing of an irrigating-can is best, the nozzle being introduced through the drainage-tube. During the first few days there should be very little pressure of fluid on the bladder, the irrigating-can being held, or placed on a table a little above the level of the patient's abdomen, so that the lotion flows into the bladder and out again through the drainage-tube with very little force. It is all-important that in the early days the drainage should be thoroughly free, and that no pressure should be thrown on the cavity from which the prostate has been removed, either by the accumulation of urine in the bladder or by pressure from a high column of lotion, so that the cavity may remain at rest, and that blood-clot adherent to its surface may remain undisturbed, thus obviating bleeding and facilitating the healing process. This is the main object with which he employs such a stout drainage tube—that the urine and clots may escape through it freely, and that, consequently, there may be no straining, which would have the effect of dilating the cavity. Patients

who pass no urine *per urethram* for ten or twelve days after operation almost invariably do best.

The patient should lie on his back for twenty-four hours, after which he should be placed alternately on either side, and on his back. During the first four or five days he should not be allowed to make any exertion, all movements being effected by his nurses. Should there be any oozing of blood after the operation, the foot of the bed should be raised on blocks, and hypodermic injections of ergotin given. He has seen no hæmorrhage requiring more active measures in connection with this operation. Shock, when it occurs immediately after operation, should be treated by warmth from hot-water bottles, extra clothing, hypodermic injections of strychnia, and enemata of coffee and brandy. Pain or spasm of the bladder should be relieved by hypodermic injections of morphia. Should there be any bronchial catarrh or other lung-affection, the patient's head and shoulders should be well raised by pillows after the first twenty-four hours succeeding the operation. And in any case this position should be encouraged early, so as to obviate hypostatic congestion of the lungs.

As a rule he removes the tube four days after operation. If the patient be thin, the tube may be dispensed with in three days; if he be very stout, it should be left in for five days. By this time plastic lymph will have been thrown out round the tube, thus shutting off the prevesical space from contact with the urine, and in this way avoiding the occurrence of cellulitis; and a free opening will have been established down to the bladder, the wound in which may now be allowed to close as rapidly as nature can accomplish this by granulation. The sutures are removed on the seventh or eighth day, by which time primary union will have taken place in the parietal wound, save, of course, in the track of the tube.

Irrigation of the bladder must be continued daily—twice daily, if the urine be at all foul—by inserting the long glass nozzle of the irrigator through the fistula right down into the viscus. The return stream will in the early days flow out beside the nozzle; but as the fistula contracts the nozzle will fill it, and the irrigation is then accomplished by alternately filling the bladder with lotion and then withdrawing the nozzle, when the fluid will rush out with more or less force. As the case advances, more and more pressure on the bladder may be employed. The irrigation should be continued till the boracic lotion returns quite clear, or the permanganate lotion unaltered. After nine or ten days from the operation Janet's method of irrigation may be employed, if possible. This consists in introducing the glass nozzle into the urethra, and gradually raising the irrigating can till the column of fluid forces the lotion into the bladder and out through the suprapubic opening. This is, perhaps, the best method of flushing out the bladder; but some patients will not tolerate it, owing to the pain produced. It should never be employed during the first week after operation for fear of causing bleeding; and if it cause pain, it should not be employed at all. Patients vary much in their tolerance of this method of irrigation.

After a fortnight or so, when the bladder is distended by lotion through the nozzle placed in the suprapubic opening, the patient will frequently pass the lotion *per urethram* as rapidly as it enters the bladder. When this takes place, it is an effectual method of flushing out the bladder.

Freyer does not now introduce a catheter till the suprapubic fistula has contracted to such narrow dimensions that it will not admit the nozzle, so that irrigation cannot be practised in this way. It is employed only during the few days before the patient begins to pass urine *per urethram* in volume, in order to keep the bladder clean during this transition period. When once natural micturition is established, the bladder is, of course, automatically flushed out.

The management of the bowels is of the utmost importance. For three or four days previous to the operation the bowels should be freely moved once daily at least, by means of a laxative pill given at night and a mild saline in the morning. On the morning of the operation the lower bowel should be emptied by means of an enema. The bowels should then be left undisturbed for three or four days, when they should be freely moved by castor oil or liquorice powder, or any drug which can be depended on to act with certainty and efficiency. After this, the bowels should be moved gently once a day by means of a pill taken at night or a saline in the morning, or both, if necessary. Patients of the prostatic age confined to bed are liable to accumulation of fæces in the rectum, forming a hard mass, owing to the want of tone in the bowel. The occurrence of this is attended by much discomfort and spasm of the bladder from pressure thereon, and this must be guarded against. Should its presence be suspected, a finger should be introduced into the rectum, the mass broken down, and removed by an enema of warm olive-oil.

Patients should, as a rule, be confined to their room, but not necessarily kept in bed, for three or four days before the operation. Poor, broken-down hospital patients will require to be kept under observation for several days at least, in order that they may be fed up and their general health improved before operation.

References.—[1]*Med. Rec.* April, 1905 ; [2]*Maryland Med. Jour.* Nov. 1904 ; [3]*Ann. Surg.* April, 1905 ; [4]*Med. News*, Jan. 14, 1905 ; [5]*Pract.* Sept. 1904.

PRURITUS. *Norman Walker, M.D.*

Bottstein[1] describes three cases in which he considers the use or abuse of tobacco was the cause, since cessation of smoking was followed by cure. Other causes were searched for but none found. The pruritus was widespread in two cases, and limited to the scrotum and perineum in the third. Leredde[2] praises the virtues of **Thiol** in solution, ointment, or glycerides of 5 to 10 per cent in pruriginous cases, whilst in another article he offers various formulæ for the exhibition of camphor.

Leredde[4] recommends in the treatment of vulvar pruritus the application of simple **Zinc Paste.** The external parts are freely covered and a piece of gauze is introduced into the vagina.

℞	Camphor	1	Oil of sweet almonds	10
℞	Lanolin	90	Chloral hydrat.	1
	Camphorated oil	10		
℞	Zinc oxide		Camphorated oil	
	Chalk		Lime water	āā 25

References.—[1]*Monats. f. Prak. Derm.* Nov. 15, 1904; [2]*La Presse Méd.* No. 91, 1904; [3]*Jour. de Méd. Inter.* Jan. 15, 1904; [4]*Revue Prat.* June, 1905.

PRURITUS ANI. *P. Lockhart Mummery, F.R.C.S.*

Cooke[1] draws attention to the importance of a very thorough examination in all cases before advising any form of treatment. He mentions among reflex causes such conditions as phimosis, urethral stricture, hypertrophied prostate, seminal vesiculitis, and in the female ovarian and uterine irritations. He summarizes the local treatment of pruritus as follows: (1) Cleanliness; (2) Protection of the parts from friction and irritation; (3) Local applications; (4) In exceptional cases the destruction of the diseased skin, preferably with chemical caustics.

Sir Chas. Ball[2], in a paper upon the treatment of inveterate pruritus ani, classes cases of this affection in three groups:—

1. Those due to parasites, either animal or mycotic.

2. Those resulting from dermatitis of the cutaneous portions of the anal canal and surrounding skin.

3. Those in which the disease is essentially in the nerves supplying the affected area with sensation.

He points out that in the second group come those cases which may be called eczema, and that as a general rule the most suitable applications to eczema of the anal region when acute and of the moist variety, are those of an **Emollient** and unirritating character; while in the more chronic and in the dry variety, highly **Stimulating** applications (such as nitrate of silver) are indicated.

In the third group are included those cases of pruritus where there is no obvious evidence of dermatitis, although there may be cutaneous abrasions the result of scratching. Their cause is due to some change in the sensory nerves of the affected area. These cases are quite incurable by any form of external application or internal treatment. He advises for the treatment of such cases an operation which has for its object the division of all the terminal branches of the sensory nerves going to the skin of the affected area.

The operation is performed as follows: The skin having been cleansed and shaved, two flaps of skin are marked out, one on each side of the anus, with their bases opposite the anus. These flaps are so planned as to include between them the whole of the affected area (*Fig.* 57). The flaps are raised by careful dissection, the dissection being continued up the anal canal to above the muco-cutaneous junction, and extending round the entire circumference, all connection with the subjacent tissues being divided (*Fig.* 58). The pedicles in front and behind are under-cut to a point well beyond the area of irritation; and the outer concave

edges of the incisions are also under-cut for at least a quarter of an inch. All bleeding is most carefully arrested, and then the flaps are sutured back into their places, a few intervals being left for drainage here and there. The immediate result of this operation is to render the entire ellipse included between the incisions anæsthetic, and the itching at once stops. In all the cases so operated upon immediate relief has followed the operation, and in none of them so far has there been any recurrence of the pruritus.

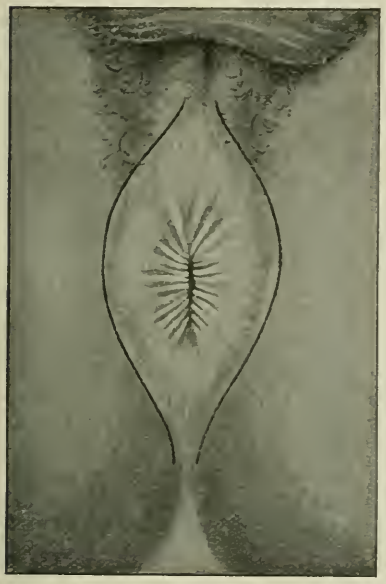

Fig. 57.

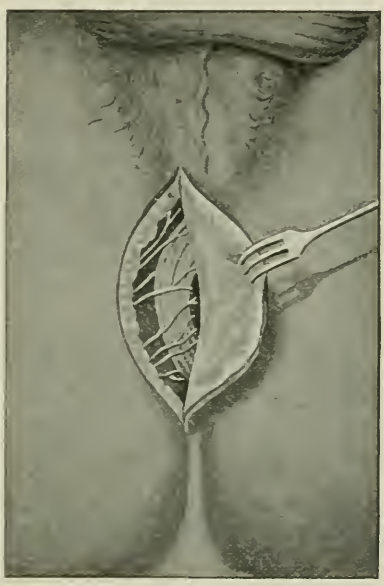

Fig. 58.

In one of Ball's cases cutaneous sensation returned some months after the operation, but there was no recurrence of the pruritus, and the patient has remained cured.

REFERENCES.—[1]*New York Med. Jour.* Sept. 3, 1904; [2]*Brit. Med. Jour.* Jan. 21, 1905.

Norman Walker, M.D.

Lewis Adler[1], after enumerating the local causes, says pruritus occurs often independently of these, and is not essentially a symptom of local affection. It is more common amongst males, bilious and neurotic individuals often suffer from it, and chief amongst the constitutional causes are gout and diabetes. The skin around the anus is characteristically rough, like parchment, and there is loss of pigment. In all cases there is more or less varicosity of the hæmorrhoidal vessels.

TREATMENT.—Daily evacuation of the bowels must be attended to. One or two ounces of

℞ Fluid ext. of hamamelis ℥ii | Fluid ext. of hydrastis) āā ℥ii
,, ,, ,, ergot ℥ii | Tinct. benzoin co.)

well shaken and injected daily for a time for the varicosity.

If the skin is rough and dry, concentrated **Silver Nitrate** solution (960 grains to the fluid ounce) is painted on, any cracks being previously painted with 5 per cent eucaine. Strong solutions are less painful than weak ones, and the application should be made every third or fourth day until the skin becomes supple and healthy looking. On the day after the painting, **Ung. Hydrarg. Nit.** (B.P.) is liberally applied all round, and over this a pad of wool and a T-bandage. This is changed every day, but not applied on the day silver nitrate is used. Scratching is forbidden, but if the parts are very itchy they may be bathed with water as hot as can be borne, though this momentarily increases the itching. Thereafter lotio nigra or calomel ointment is applied locally. Should the skin about the anus become tender or sore from the use of citrine ointment, the calomel ointment should be employed till all tenderness has disappeared. When the anal surface is very sensitive, it should be painted with tinct. benzoini co.

Prior to the patient's coming for next treatment, the parts may be washed with Castile soap and hot water, but this is not essential. In bathing the parts no rubbing is to be done. For the first two or three weeks treatment must be daily, then every other day for three weeks, and then once a week. Usually six months is required, and the patient must be warned that recurrences are not unusual and have no special significance. In typical cases before treatment the itching is usually most marked towards the perineum, but after some six weeks its location changes, and it is chiefly felt at the verge of the anus. Many cases have remained cured for ten years. He has had no failures except in three cases, two of which did not go through a complete course.

Weinberg[2] used **Naphthalan** in the form of ointment and suppositories in a case of pruritus ani with pruriginous eczema of the scrotum of a patient confined to bed by the severity of the symptoms. In twenty-four hours there was improvement, while in a week the patient was able to return to work.

REFERENCES.—[1]*New York Med. Jour.* July 29, 1905; [2]*Die Heilkunde*, April, 1905.

PSORIASIS. *Norman Walker, M.D.*

Marques reports a successful result from exposure to X-rays. The patient was under treatment for six weeks, when he was dismissed cured. Five months later there was no recurrence.

PTOSIS. (*See* EYELIDS, *also* MOTOR APPARATUS OF THE EYE.)

PULSE AND BLOOD PRESSURE. *Alfred H. Carter, M.D.*

Galli[1] maintains that the paradoxic pulse is not by itself (as Kussmaul taught) characteristic of chronic mediastinitis, but only when associated with inspiratory swelling of the veins of the neck. The same author[2] draws attention to the fact that in many cases of heart disease, the ordinary increased frequency of the pulse in the vertical, as compared with the recumbent posture, is not observed. When compensation is defective, with systemic venous engorgement, the pulse rates in the two positions tend to approximate, and may even be lower in the vertical than in the horizontal position. This is more marked in mitral than in aortic disease. On the other hand, when the cardiac disease was recent, and the myocardium in good condition, the normal relationship was maintained.

Baccarani[3] has made some observations on the influence of **Mud-Baths** on the pulse pressure in healthy persons, and those suffering from cardiac disease respectively. Without repeating the details of his experiments, the general outcome was that, while the blood pressure was reduced in both, it was more marked and more prolonged in the subjects of cardiac disease, apparently in inverse proportion to the functional integrity of the myocardium.

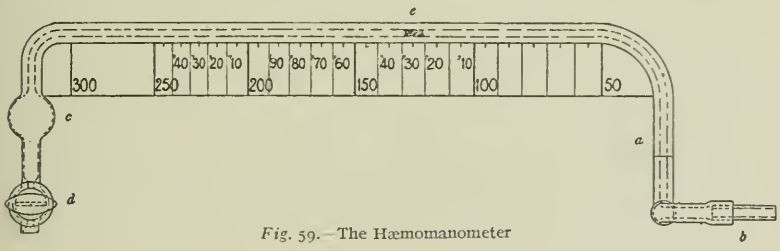

Fig. 59.—The Hæmomanometer

An interesting epitome of recent work on blood pressure is given by Cowan[4], but cannot well be presented in the form of an abstract. Martin[5] discusses the respective efficiency of various instruments in use for clinical investigation of blood pressure, and describes one which he has personally devised. The paper led to some correspondence. Without attempting to adjudicate on the merits of rival instruments, it seems unwise to emphasize the importance of the determination of systolic pressure, at the expense of diastolic pressure. Indeed, of the two, the latter has the more important bearing upon the degree of peripheral resistance. It is therefore desirable to employ an instrument which records both systolic and diastolic pressure. For this purpose Stanton's apparatus is very good, but rather cumbersome.

Oliver has invented a very ingenious instrument for this purpose, which will shortly be obtainable. His well-known hæmodynamometer is excellent for ordinary clinical purposes, indicating by the point of maximum oscillations the mean arterial pressure. Continuing his researches on hæmomanometry, he describes[6] a new instrument for

blood-pressure observations. The instrument is graduated from the mercurial manometer, and is fixed in a box in a horizontal position. It consists of a glass tube about 12 inches in length (*Fig.* 59, *a*), receiving at one end (*b*) the rubber tube which leads to the rubber bag encircling the part from which it is desired to take the blood pressure, and terminating in an air bulb (*c*) and tap (*d*). A short column (25 millimetres in length) of absolute alcohol, coloured by Merck's fett-farben Blau (*e*) is used as the indicator. A short mercurial indicator is not sufficiently sensitive to show the diastolic pressure from the finger, but, as a rule, suffices for that from the arm and forearm, and becomes much more responsive to pulsation when conjoined with a drop of absolute alcohol. Spirit or mercury (preferably with a trace of spirit) may therefore be used as the indicator.

The principle followed is to raise the air pressure in the rubber bag, and to measure it by the compression of the air in front of the index. By this simple arrangement the air within the apparatus, when the tap is closed, becomes, as it were, a portion of the compressed air inside the bag and tubing—the degree to which the compression is carried by the observer being indicated by the upper end of the short column of the coloured spirit or mercury interposed between the two areas of compressed air. The principle of air compression for the measurement of blood pressure has been adopted by Hill and Barnard in their liquid sphygmometer, and by Gärtner in his tonometer. The apparatus consists of: (1) The hæmomanometer; 2) The filler and regulator, which are joined together so that the former may be squeezed by the hand and the latter may be actuated by the thumb, leaving the other hand free to feel the pulse during the reading of the pressures (diastolic and systolic); (3) Rigid rubber connections; (4) Two air bags, canvas covered, with straps and friction buckles which are secure at any point, (*a*) 12 × 33 centimetres for arm and forearm, and (*b*) 3 × 9 centimetres for phalanges and for the venous pressure; and (5) A stout rubber ring as compressor for taking the systolic digital pressure.

This apparatus appears to present the following advantages over the mercurial manometer employed in clinical observation:—

1. Portability, compactness, and general adaptability to practical requirement without loss of accuracy.

2. The sensitiveness of the spirit indicator is shown by the fact that it enables the arterial pressure (diastolic) to be taken almost in the pre-capillary area of the arterial system (finger-tip) as well as in the arteries of the limbs.

3. This instrument furnishes the systolic and diastolic pressures in the finger (as afforded by Gärtner's tonometer and Mosso's sphygmomanometer) as well as in the limbs; and the venous pressure.

4. The scale being horizontal and open (instead of being vertical and contracted, as in the U-shaped mercurial manometer), is read with ease and accuracy

5. It possesses the advantage over a mercurial manometer, of an absence of inertia which is practically complete.

There are two ways of reading arterial pressure which are adopted by different workers. In the one, the pressure recorded is that which is just sufficient to stop pulsation in the artery below the point at which it is applied. This indicates the maximum systolic pressure exerted by the left ventricle. In the other, the pressure recorded is that at which the maximum oscillation of the indicator occurs. The exact interpretation of the latter is still *sub judice*—whether it denotes the mean or the minimal diastolic pressure. Oliver adopts the latter view. He considers that, taking all reasonable precaution against accidental disturbance of pressure, the normal diastolic pressure in the radial artery is about 95 to 100 mm. Hg.; as compared with a normal systolic pressure of 115 to 120 mm. Hg. He finds that the difference between diastolic and systolic pressures increases with age. With vaso-contraction the difference widens; with vaso-dilatation the difference tends to become less. The systolic pressure denotes the systolic force of the left ventricle, while the diastolic pressure is the best guide to the peripheral resistance.

With regard to the means at our disposal for controlling blood-pressure, Oliver's conclusions are worthy of note. The ordinary depressor remedies, such as potassium iodide, salicylates, and nitrites, while useful to meet a temporary indication, are not satisfactory for prolonged administration. **Movement-cures** and allied methods are of great value as methods by which the transfer of blood from central to peripheral parts is assisted. Ordinary medicinal vaso-dilators first let down the diastolic pressure, and then the systolic. In certain aromatic bodies, such as the **Hippurates, Benzoates, Cinnamates, Coumarates,** and their derivatives, will be found some persistent vaso-dilators which may be taken for lengthened periods without impairment of their dilating property, and without harm to the body. These bodies are widely distributed throughout the vegetable kingdom; and it may be that the influence of vegetables in lowering blood-pressure may be due—at least in part—to this fact. The article as a whole deserves careful study.

Hypertension and Hypotension.—Among the admonitions of senile degeneration, shadowing a fate which, though yet far off, is still approaching, Briggs[7] discusses that which takes the form of hypertension of the pulse in association with albuminuria, without irreparable structural damage of the kidneys. The condition may be associated (but not necessarily) with other symptoms, such as headache, vertigo, spasmodic or convulsive attacks, or transient slight apoplectic symptoms. This trouble may and often does pass off altogether under the influence of treatment directed to the lowering of arterial pressure, such as **Rest, Purgation,** a simple regimen, and the administration of **Nitrites** and **Iodides.** He concludes with the following statements:—

1. Albuminuria (and cylindruria) in the subjects of generalized arteriosclerosis, where no other cause is at work, is always accompanied by a state of high blood-pressure.

2. Intermittent attacks of hypertension of the pulse and con-

comitant albuminuria, separated by longer or shorter intervals of normal blood pressure during which the urine is normal, may be the only clinical expressions of a generalized arteriosclerosis.

3. Therapeutic relief of hypertension in this general class of cases, if not carried too far, will tend to relieve the pathological condition of the urine. In a certain number of cases we may reasonably hope by this means to postpone the onset of chronic renal changes.

Bose and Vedel[8], in discussing the treatment of morbid conditions associated with alteration of arterial tension, state that in view of the very large number of primary and secondary cases of hypertension, it is obvious that therapeutical indications must necessarily be complex, and that prophylaxis and general hygiene must be accorded a conspicuous position in the treatment. The recognition of the primordial cause of the hypertension is indispensable, especially in cases of recent intoxication, in which its early removal may suffice to bring about permanent recovery. In cases in which the immediate removal of the cause is not practicable, or in which the organism has become deeply impregnated therewith, our only hope lies in **Organotherapy,** which exerts an unquestionable antitoxic action. With regard to infectious diseases, which are usually associated with hypertension when fully developed, the treatment must be continued after apparent recovery in order to prevent, or to bring about, the immediate subsidence of sclerotic processes leading to hypertension. The treatment must be particularly energetic in diseases which, like scarlet fever, are powerfully hypertensive and sclerogenous from their onset.

The alimentary regimen indisputably occupies a foremost place in the therapeusis. Not only must excesses be forbidden, but we must also avoid all causes capable of increasing the spasm, or of provoking or aggravating the sclerosis. In cases of renal insufficiency, **Milk Diet** should be ordered. As a general rule an exclusively milk diet, indicated more particularly in pronounced hypertension with marked lesions of the heart and kidneys, is well borne, provided it be alternated with a **Lacto-Vegetarian** diet or an achloric meat diet. Constipation must be overcome by repeated **Purgation,** and, in addition, we must prescribe **Saline Aperients,** which constitute an active eliminatory medication in the same manner as sudorifics and diuretics.

When the spasmodic phenomena are complicated by sclerosis of the arterioles, we must avoid all causes which may threaten the integrity of the fragile arterioles (emotion, physical strain, coitus, etc.) It is also important to bear in mind that drastic purgatives, such as jalap, should under these conditions be given cautiously, the patient keeping his bed for two or three hours after ingestion in order to avert any reflex of gastric origin, or syncope due to cerebral anæmia.

In the treatment of permanent hypertension, antispasmodic and hypotensive treatment can at best only yield palliative results. It is indispensable to aim at the resolution of the sclerotic lesions, and with this object in view we may prescribe **Iodide of Sodium** *in small doses* (2 to 10 grs. in the twenty-four hours), suspending the treatment from

time to time and giving, in the intervals, **Alkalies, Intestinal Disinfectants,** and **Sulphate of Soda,** for the purpose of promoting the elimination of the iodide.

When the morbid process has reached the stage of arteriosclerosis and atheroma, resolutive treatment, though useless in respect of the organic lesions, may still be of service in arresting, or promoting recovery from, the sclerotic lesions still going on in the small vessels of the new formation. But the most important thing under these conditions is to guard against the fragility of the arterioles, and to avert hæmorrhage consequent upon rupture by obviating attacks of hypertension.

In the treatment of hypotension, **Hydrotherapy** appears to be the most efficacious of the general measures having for object to re-establish arterial tension. The **Cold Bath** appears to be the most active, but the gradually cooled bath and wet packing act in the same way, though less energetically. The **Warm Bath** has a marked action on arterial tension, and it has been methodically employed in the treatment of hypotensive infectious diseases in children. This measure is specially indicated whenever the state of the heart, hæmorrhage, or extreme youth constitute a contra-indication to the use of the cold bath.

Although hypotension is usually merely a symptom, and its special treatment forms part of the general treatment of the disease, there is one particular medication that is generally conceded to fulfil the rational treatment of this condition, in that it combats at one and the same time all the factors that contribute to bring it about—viz., copious **Saline Injections.** In regard to adrenalin, its influence on arterial tension is extremely ephemeral, and its action exposes the patient to a whole category of accidents ; consequently it should be only employed with great caution.

Rose[9], as the result of certain experiments he made to establish the effect of the **Dry Carbonic Acid Bath** upon the circulation, states that it raises the arterial blood pressure, with improvement in the rhythm and vigour of the pulse, but there is nothing to show that (in this form) it has any therapeutic value.

Cardiac Arhythmia.—Fisher[10] publishes a case of curious cardiac action occurring in a young woman, aged twenty-five, the subject of double mitral disease. Three weeks before she came under observation, during a thunderstorm, she became aware that her heart gave a "double jump." The impulse seemed to consist of two beats, one beat marked at the apex, and the other nearer the sternum, quickly following each other in the order given. This double impulse was accompanied by one pulsation in the arteries, and one in the right external jugular vein. The systolic murmur was associated with the earlier of the two impulses. The second sound was reduplicated at the second and third left cartilages. No post-mortem examination was permitted. The author suggests that it was an instance of independent action of the two ventricles. Both the jugular and carotid pulse were

of the same rate, 45 to 50 per minute, but when the double action ceased, the rate of each was approximately doubled.

Bradycardia.—Gibson[11] divides true bradycardia into two groups, according as its cause is extrinsic or intrinsic. Under the former he includes heredity, nervous influences (central or reflex), and toxic; and under the latter, morbid conditions of the heart itself. There are two chief varieties: one in which the alteration in pulse rate is constant, the other in which it is paroxysmal. The distinction is not absolute, and one variety sometimes passes into the other. The clinical features may be inconspicuous, or profoundly disturbing. In mild cases of persistent bradycardia the usual clinical features are those of weakness and breathlessness, sometimes along with anginous attacks. On the other hand, in paroxysmal bradycardia there is apt to be faintness and giddiness, along with apoplectic or epileptic attacks. In many instances considerable digestive disturbances are found, while more rarely glycosuria or some other apparently bulbar symptom may be present.

As regards treatment, there can be no doubt that **Rest** is the most important therapeutic agent. But, along with this, various **Respiratory Exercises** are of real importance, while attention to the digestive processes is imperatively necessary. Amongst drugs, **Iodides** and **Hydriodic Acid** are most beneficial in the attempt to restore a healthy condition of heart and vessels; **Nitroglycerin,** or some other nitrite, is useful if there is any tendency to vascular spasm; the **Bromides** have a certain utility, probably by lessening the action of the vagus; while **Strychnine** and **Digitalis,** or **Strophanthus,** are undoubtedly beneficial when cardiac failure threatens to ensue.

Gillies[12] writes a short but useful paper on the so-called Stokes-Adams syndrome (paroxysmal bradycardia), but it does not carry our knowledge further than the paper of Osler, which was noticed in the *Annual* last year.

Griewe[13], on the basis of a carefully reported case of bradycardia associated with marked arterioclerosis of the coronary arteries, without degeneration of the cardiac muscle, discusses the etiology of bradycardia. He adopts the twofold classification of Strubing—bradycardia of extracardiac and of cardiac origin. The greater number of cases come within the former of these categories, and, in the present state of our knowledge, either a direct or indirect irritation of the vagus nerve, or a direct affection of the cardiac muscle by some substance circulating in the blood. In either case the disturbance of the heart is of a purely functional nature. In cardiac bradycardia he believes that there is always either fatty degeneration of the cardiac muscle, or marked interference with the coronary circulation. He considers that it occurs quite independently of any disturbance of the intracardiac nervous ganglia.

Tachycardia, Paroxysmal.—Barr[14] contributes an exceptionally instructive case of this condition, which should be read *in extenso* to be truly appreciated. A youth, aged sixteen, had three attacks under observation; one lasting twenty-four hours, the second four days, the

third three days. Each attack came on after strain ; the first after a football "crush," the second after carrying a heavy load, the third after "flying from the police." Each time the mean blood pressure in the radial was high, and unduly near the obliterating pressure, with marked engorgement of the right heart. There was comparatively little cardiac distress, no anginal-like seizure, and no real dyspnœa. Treatment addressed to lowering the peripheral resistance and equalizing the distribution of the blood on both sides of the heart was on each occasion successful. He ascribes the attacks to the acute cardiac strain leading to over-distension of the right heart.

The treatment in detail which the author recommends in such cases is as follows Put the patient in bed, freely use such agents as **Amyl-Nitrite, Nitroglycerin,** etc. Encourage the patient to take long, deep breaths so as to aspirate the blood from the right side of the heart into the lungs, and thus give a better supply to the left ventricle. Counter-irritation might call into play the reflex cardiac contraction of Abrams. If, after the preceding measures have been carried out, the hyperdistended right ventricle does not properly contract, then the addition of **Digitalis** or of **Digitalin** and **Strychnine** is required, and a good brisk **Purgative** to clear the portal circulation. The diet should be as dry as possible, so as to avoid the addition of fluid to the over-repleted veins and right side of the heart.

The author also incidentally refers to the case of a youth in whom he accidentally induced a very severe attack of paroxysmal tachycardia, as the result of injecting 18 c.c. of **Adrenalin Solution** into the peritoneal cavity after paracentesis. The condition thus brought about was exactly analogous to that recorded in the preceding case.

Martin[15] records six cases of persistent tachycardia occurring as the result of injury or shock.

References.—[1]*Brit. Med. Jour.* Oct. 8, 1904 ; [2]*Treatment,* July, 1904 ; [3]*Ibid,* July, 1904 ; [4]*Pract.* Aug. 1904 ; [5]*Brit. Med. Jour.* April 22, 1905 ; [6]*Lancet,* July 22, 1905 ; [7]*Amer. Jour. Med. Sci.* Aug. 1905 ; [8]*Med. Press,* July 12, 1905 ; [9]*New York Med. Jour.* July 9, 1905 ; [10]*Med. Chron.* July 1905 ; [11]*Brit. Med. Jour.* Oct. 8, 1904 ; [12]*Montr. Med. Jour.* June, 1904 ; [13]*New York Med. Jour.* July 1, 1905 ; [14]*Brit. Med. Jour.* July 16, 1905 ; [15]*Med. Rec.* Dec. 3, 1904.

PUERPERAL FEVER. (*See* Labour.)

QUADRICEPS EXTENSOR (Rupture of).

Priestley Leech, M.D., F.R.C.S.

Quénu and Duval[1] show by reference to statistics that the non-operative treatment of this condition is very uncertain in its results, and they recommend suture in every case. The operation must not be done at once, but some days must be spent in adequately sterilizing the skin above the knee. They prefer a vertical incision, as they say this gives better access to the joint. All clots are removed from the joint. The ends of the ruptured tendon are slightly trimmed by the scissors ; a stout silver wire is then passed through the upper end,

1 cm. from the end, and then through the patella, 1 cm. from the upper border; the wire is twisted, but not so as to bring strong pressure. The superficial fibres are united to the tendon by fine threads, and the torn portions of the lateropatellar expansions are also united. The limb is put up in extension, and the after treatment is the same as for fracture of the patella.

REFERENCE.—[1]*Rev. de Chir.* Feb. 10, 1905.

RABIES. *Purves Stewart, M.D.*

Hitherto, in spite of the researches of Pasteur and others, the organism underlying rabies, though its existence was to be assumed on broad general grounds, had not been specifically isolated. Recently however, Negri[1], of Pavia, has described a micro-organism in the nervous system of animals suffering from rabies. It is of the nature of a protozoon, round, oval, or angular, varying widely in size from 1 to 20 μ in diameter. These protozoa have been found within the nerve-cells in all parts of the nervous system, and Negri claims to have demonstrated them in 50 out of 52 cases examined. They were not present in conditions other than rabies. He also found the organism in one case in man. The smaller bodies are homogeneous; the larger ones granular, irregular in shape, with one or more nuclei. If these observations are confirmed, they will prove of the utmost importance.

The diagnostic value of Negri's bodies has been warmly supported by various observers, notably by Poor[2]. He investigated 16 cases of rabies occurring naturally (including one in man), i.e., from the bites of rabid animals, and in an equal number of cases where the disease was produced artificially by inoculation. A small piece of the cerebellar cortex, and another portion from the cornu ammonis of the cerebral cortex, were systematically examined. In all Poor's cases the Negri bodies were found in one or other of these situations. Twenty-three control cases in animals suffering from diseases other than rabies, were similarly examined, and in none of them were there found Negri bodies, or anything resembling them. The advantage of this method of diagnosis is its rapidity. By this means a diagnosis can be made within twenty-four hours instead of waiting days or weeks for the result of inoculation experiments, when, moreover, the inoculated animal may die prematurely from other causes. Poor states that the Negri bodies are remarkably resistant to post-mortem changes, so that even though the brain be not quite fresh, a diagnosis may still be possible.

REFERENCES.—[1]*Lo Speriment*, April, 1904; [2]*Med. Rec.* April 15, 1905.

RECTUM. (*See also* ANUS.) *P. Lockhart Mummery, F.R.C.S.*

Fistula in Ano.—The treatment of fistula by excision of the fistulous tract and complete closure of the wound by suture, has been the aim of most rectal surgeons, and several different methods of performing the operation have been described. This method is the ideal one, as if successful it results in primary union and greatly hastens recovery.

Most surgeons who have attempted this method of treating fistula have had successful cases, though it is only applicable in a few simple cases of fistula close to the anal margin, and in which the track is more or less straight. Owing, however, to the number of failures, and the great difficulty of obtaining proper aseptic healing in this region, most surgeons who have attempted this method have discarded it in favour of incision. Brick[1], after an extensive trial of this method, has come to the conclusion that incision, with careful dissection of all the fibrous tissue, and allowing the wound to granulate from the bottom, gives the best results.

Treatment of Internal Hæmorrhoids.—Many attempts have been made to find a method of operating upon internal hæmorrhoids by excision that will result in primary union of the wound. This is the ideal method, but it is always a mistake to allow our anxiety to attain the ideal method of operating to outweigh the interest of the patient in obtaining relief from his trouble. The method of excision which has had most followers is that known as Whitehead's operation. There has been much discussion from time to time as to the relative merits of this method, and the older one of ligature or clamp and cautery. Horsley[2] has recently revived this discussion by strongly advocating Whitehead's operation for all cases of internal piles. The chief converse argument is that the operation by ligature, if carried out with proper aseptic precautions—as it always should be—leaves little to be desired as regards the results, the complications which are liable to follow are few and comparatively unimportant, and the results as regards cure of the hæmorrhoids are excellent. Whitehead's operation, on the other hand, is liable to be followed by serious complications, and its results are certainly no better than the ligature method.

McBurney[3], while he advocates local excision of the piles, entirely condemns Whitehead's operation : in the first place, because it is quite unnecessary to remove so much tissue as that involved by the removal of the whole " pile-bearing area," and secondly, because the operation has far too frequently resulted in prolonged ulceration and in intractable stricture to be justifiable. Gant[4] condemns Whitehead's operation for the same reasons, and adds that it may result in incontinence.

Adler[5] also condemns it as being too severe and unnecessary. There is another serious objection to this operation which does not seem to have received the attention it deserves. In Whitehead's operation all the sensory nerves to the anal canal are necessarily removed or divided, and the mucous membrane of the rectum which is brought down to replace that removed from the anal canal is quite devoid of sensory nerves. The anal canal after Whitehead's operation, therefore, unlike the normal anal canal, which is richly supplied with sensory nerves, is quite insensitive. And as one would expect, patients who have been operated upon by his method often complain of the unconscious passage of flatus and of partial incontinence, due to this loss of sensation in the parts. This in itself is a fatal objection to Whitehead's operation.

McBurney (op. cit.) advocates excision of the piles by an elliptical incision surrounding the base of each pile; all bleeding is arrested, and the wounds are carefully stitched up. The main vessels of the pile are treated as a pedicle and ligatured separately. This is a very similar operation to that described by Laplace [6], the chief difference being the treatment of the pile pedicle separately.

Comby [7] states that hæmorrhoids are not so rare in children as has been supposed, and describes five cases of children from two to three years old suffering from this complaint. His cases show that hæmorrhoids may appear during early life, and cause internal hæmorrhage, and he insists upon the importance of operative interference in such cases.

Von Baracj [8] advocates that in cases of gangrenous internal hæmorrhoids the best treatment is immediate operation by the clamp and cautery method. The advantages of this treatment, as against waiting until the inflammation has subsided before performing the radical operation, are that much time is saved, the patient is at once relieved of pain, and a dangerous source of infection is removed.

Prolapse of the Rectum.—Mr. Swinford Edwards [9] reports a successful case of abdominal fixation of the sigmoid meso-colon for a rectal prolapse which had followed an excision of the rectum eighteen months previously in a man of sixty. The meso-sigmoid was stitched to the peritoneum and muscular wall of the abdomen. He also reports two other successful cases. Becker [10] reports 11 cases of prolapse treated by Rehn's operation. In this operation the mucous membrane is dissected free from the remainder of the prolapse, and after being cut short is stitched to the cutaneous margin. The muscular coat is puckered up around the termination of the anal canal, and forms a muscular ring, which it is claimed assists in preventing any further prolapse. All the cases are stated to have remained free from recurrence.

References.—[1]*New York Med. Jour.* July 23, 1904; [2]*Clin. Jour.* Feb. 15, 1905; [3]*New York Med. Jour.* March 4, 1905; [4]*New York Med. Jour.* Jan. 7, 1905; [5]*Med. Chron.* June, 1905; [6]*New York Med. Jour.* Dec. 24, 1904; [7]*Arch. de Méd. des Enf.* No. 11, 1904; [8]*Centr. f. Chir.* No. 17, 1905; [9]*Med. Press,* July 20, 1904; [10]*Ther. Gaz.* March, 1905.

RECTUM (Cancer of). *P. Lockhart Mummery, F.R.C.S.*

Examination of the Upper Rectum and Sigmoid Flexure with the Sigmoidoscope.—No one can doubt the importance of a method which enables us to supplant surmise by accurate knowledge in the diagnosis of such a disease as cancer. Strauss's sigmoidoscope [1] makes it possible to diagnose with certainty lesions in the higher portions of the rectum and in the sigmoid flexure which otherwise could only be diagnosed from the symptoms or by an exploratory laparotomy. This instrument is of special value in the diagnosis of growths situated out of reach of the finger, as the paramount importance of an early diagnosis in such cases is universally recognized. The sigmoidoscope has now had an extended trial in the hands of practical surgeons, and its value has been

fully demonstrated. It has proved perfectly safe in experienced hands; very little discomfort to the patient attends its use, and an anæsthetic is unnecessary. Mayo Robson[2] has pointed out that the sigmoidoscope has rendered easy the diagnosis of tumours of the rectum, and so paved the way for the radical treatment of these tumours at an early stage, and it is of the utmost importance that they should be diagnosed early if we are to obtain successful results from operative treatment. At present far too many cases of cancer of the rectum present themselves at a stage when it is hopeless to expect good results from operative interference.

The instrument consists of a metal tube 30 cms. long and graduated on the outside. At the back of this tube, and fitting into it by a bayonet joint, is a hollow metal cone, carrying a small electric lamp at the end of a long metal rod. When this is in place, the lamp is situated about an inch from the extreme end of the tube and close to its roof. There is a glass window which closes the back end of the tube, and attached to one side a tap to which a rubber bellows can be attached. For the introduction of the tube through the sphincters a metal obturator is provided (*Fig.* 60).

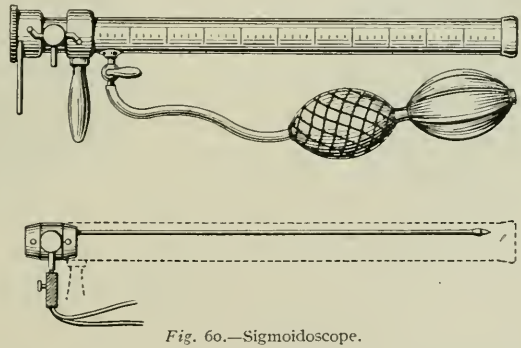

Fig. 60.—Sigmoidoscope.

Method of using the Instrument.—The patient is placed either in the genu-pectoral position or in the semi-prone position, with the buttocks raised; the latter is preferable in women. The instrument with the obturator in place is passed through the sphincters for about 6 inches; the obturator is then removed and the lamp inserted. The instrument is then passed on by sight, the lumen of the bowel being looked for, and when found opened up by pumping in a little air with the bellows: the tube is thus gradually pushed on into the sigmoid colon. No force should be used, but the instrument should be passed entirely by sight. The mucous membrane of the bowel is most easily examined as the instrument is being withdrawn. It is of course essential that the bowel should be quite empty at the time of the examination, and it is often necessary to prepare the patient beforehand by aperients and enemata. When a growth is seen, its position and size are easily ascertained, and by pushing it gently with the end of the tube, or by

alternately inflating and deflating the bowel, it is possible to obtain a very fair estimate of its mobility. It is possible with this instrument to examine the whole of the rectum and the greater part of the sigmoid flexure. The distance to which it can be passed depends mainly upon the length of the sigmoid mesentery. If the mesentery is unusually short, it is not possible to pass the instrument beyond the last loop of the sigmoid. When properly used, an examination with this instrument causes very little discomfort, and no anæsthetic is required.

The chief value of the sigmoidoscope is that it enables us to detect with certainty lesions of the bowel which are quite out of reach of the finger per anum, and to diagnose tumours in their early stages, before they have reached a size which negatives surgical removal. It should also prove of considerable value in the differential diagnosis of cases of colitis, and indeed an examination with it should be a necessary preliminary to treatment in all such cases (*See Plate XXVI, A, B, C, D, E, F.*)

Fedoroff[3], who uses a somewhat similar instrument, points out its value in the diagnosis of all conditions of the upper bowel.

Excision of the Rectum.—There is a steadily increasing tendency towards improvement in the technique of this operation, more especially towards the wider removal of the growth and of those lymphatic areas which directly drain it. This is a step in the right direction, and should do much to improve the results as regards recurrence. Mayo-Robson[2], in his Bradshaw lecture, mentions the improved results which have followed wide removal of the growth. He mentions one case of complete freedom from recurrence twelve years and one of eight years after excision for cancer. He also refers to a case of Clinton Dent's[4] of death from recurrence in the liver twenty-one years after excision of the rectum for carcinoma.

Mummery[5], in discussing the question of recurrence after excision, points out that even in those cases where the growth returns in a year or two after operation, the patients are much more comfortable and more free from pain than would have been the case had the primary growth not been removed. Schloffer[6], after a critical consideration of the different methods of excision, comes to the conclusion that abdominal extirpation gives the most satisfactory results. He concludes that abdominal operation, alone or combined with operation from below, is called for when the growth is 6 to 8 cm. above the sphincter, its chief advantage being the access which it gives to the lymphatic glands.

A very successful case of excision of the rectum in a man of fifty, by the abdomino-perineal route, is reported by Murray[7]. The technique used was Aldrich-Blake's modification of Ball's operation. The bowel was first freed right down to the anus from the abdominal wound, and then from below the rectum was detached from the sphincters and drawn out until the healthy bowel above the growth was reached, when it was divided and sutured to the skin edge.

Wallis[8] reports a case of excision of the rectum for carcinoma, with restoration of control by the normal anus. The growth was first

Plate XXVI.

LESIONS IN THE UPPER RECTUM AND SIGMOID FLEXURE SEEN THROUGH THE ELECTRIC SIGMOIDOSCOPE.

Fig. A.

Carcinoma of the rectum. The growth was situated 14 cms. from the anus.

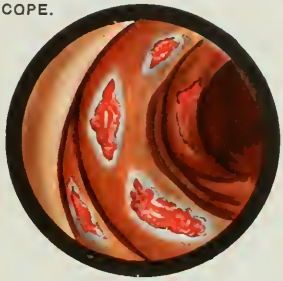

Fig. B.

Ulceration of the mucous membrane at the junction of the rectum and sigmoid flexure. The patient was a woman aged 40, who suffered from chronic constipation.

Fig. C.

Cancer in the sigmoid flexure. The growth was 22 cms. from the anus. The growth was subsequently removed from the abdomen by Mr. Mayo Robson, and an end-to-end anastomosis performed.

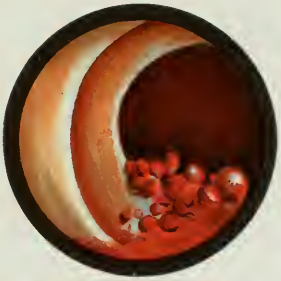

Fig. D.

Cancer of the sigmoid flexure, just above the pelvic brim.

Fig. E.

Cancer in the middle of the sigmoid flexure of the colon. The patient was a man aged 46.

Fig. F.

The appearances in a case of ulcerative colitis.

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excised by the trans-sacral route, and a sacral anus established; at a subsequent operation the prolapsed mucous membrane was brought down through the sphincters and sutured to the skin margin.

Meyer[9] mentions a case of excision of the rectum in which the after-treatment was complicated by the impaction of fæcal stones in the new anus, the stones having to be removed by instruments.

Edwards[10] records his experience of 40 cases of excision of the rectum by the sacral route. Of these cases 5 were lost sight of altogether, and 5 more were not traced for more than a year after operation; of the remainder 13 were in good health, one after ten years, two after four years, three after three years, four after two years, and three recent ones after one year. Recurrences occurred in 14 cases: in 1 case eight years after operation, in 1 after four years, in 1 after three years, and in the remainder after two years. Three cases died from the immediate effects of the operation, making a percentage mortality of 7·5 per cent.

Adler[11] discusses the value of **Radium** and **X-rays** in the treatment of rectal cancer. He comes to the conclusion that although a marked diminution in the size of the tumour often follows the application of the rays in the first instance, their continuance results in a profound toxæmia and considerable aggravation of the symptoms, while the tumour soon returns to its original size. He found that tenesmus was markedly increased by the treatment. He considered that the patients were rendered worse rather than better by the applications.

References.—[1]*Lancet*, June 25, 1904, and *Clin. Jour.* March 8, 1905; [2]*Ibid*, Dec. 8, 1904; [3]*Vratch*, May 29; [4]*Lancet*, Aug. 27, 1904; [5]*Pract.* Nov. 1904; [6]*Beitr. z. klin. Chir.* Bd. xlii. 396; [7]*Lancet*, May 6, 1905; [8]*Ibid*, April 29, 1905; [9]*Ann. Surg.* Sept. 1904; [10]"Carcinoma of the Rectum," Swinson Edwards; [11]*Ther. Gaz.* Oct. 24, 1904.

REFRACTION (Disorders of). *A. Hugh Thompson, M.D.*

Myopia.—A connection between myopia and over-use of the eyes at school has long been well known. A research carried out by Dr. Ettie Sayer[1], in the London County Council schools, tends to prove that the average deterioration of vision commences in the infant-school. The visual acuity of 1864 infants between the ages of six and eight was carefully tested by a method adapted to their mental capacity. It was found that at six years of age 81 per cent had vision equal to $\frac{6}{6}$ with each eye separately, and only 3·5 per cent had such serious defects that they could only see $\frac{6}{18}$. The proportion of defective eyes steadily increased with every quarter of a year of age, so that at the age of eight only 77 per cent had vision of each eye equal to $\frac{6}{6}$, and as many as 8 per cent could only see $\frac{6}{18}$. In the boys' and girls' departments this proportion increases until at the age of eleven, 11 per cent can only see $\frac{6}{18}$, while only 58 per cent see $\frac{6}{6}$ with each eye. The need for a radical change in the methods of education hitherto adopted in infant schools is obvious. For older children the remedy seems to be on the one hand in providing special classes for those whose sight is discovered to be defective, and on the other, the provision of greater facilities for the correction of refractive errors by glasses,

and especially of astigmatism, since, as all who have investigated this subject have found, astigmatism is the almost invariable precursor of short sight.

The employment of **Massage** in the treatment of errors of refraction is heard of now and again, and we need not be surprised when, during the "silly season," we are asked by readers of the popular press whether it is true that spectacles are going to be abolished. According to Maddox it is undoubtedly true that the shape of the eyeball may be temporarily altered by external pressure so as to improve the vision of an eye which is, for instance, myopic. Unfortunately, the improvement is only temporary, as the eye regains its former shape after the treatment is suspended, though this may take some time, just as a trampled daisy only slowly becomes erect again. The subject is discussed in Darier's book on "Ocular Therapeutics."

Some years ago the generally received explanation of the act of *accommodation*, which we owe to Helmholtz, was challenged by Tscherning, whose work was introduced to English readers by Priestley Smith[2]. The subject is now being investigated by Grossmann[3]. In 1903 he came to the following conclusions: During accommodation "(1) The diameter of the lens equator becomes smaller; (2) The antero-posterior (axial) diameter of the lens increases; (3) The anterior pole of the lens moves forward (towards the cornea), the posterior pole of the lens moves backwards; (4) By means of retinoscopy, a ring-shaped shadow zone becomes visible between the centre and the equator of the lens, as an expression of the occurring refractive changes —of the formation of a lenticonus accommodativus; (5) It was proved by means of the Sanson-Purkinje reflex images that the posterior surface of the lens also forms a lenticonus; (6) The lens *in toto* moves upwards and inwards."

At the meeting of the British Medical Association in 1904, he illustrated the last point—the movement upwards and inwards of the lens—by a case in which both pupils were symmetrically displaced upwards and inwards. The patient had some myopic astigmatism which was not corneal, and during accommodation the axis of the astigmatism was altered, a circumstance which Grossmann attributes to the alteration in the position of the lens. In his opinion the observation furnishes the explanation of a somewhat rare and obscure condition—a temporary alteration during accommodation of the astigmatism found to exist for distance. In his case he found the axis of the cylinders required for near vision slightly different from the axis of the cylinders required for distant vision.

References.—[1]*Brit. Med. Jour.* June 18, 1904; [2]*Trans. Ophth. Soc.*, 1897; [3]*Brit. Med. Jour.* Sept. 24, 1904.

RETINA AND CHOROID (Diseases of). *A. Hugh Thompson, M.D.*

In diseases of the retina and choroid, the extent to which vision is affected often bears very little relation to the changes apparent to the ophthalmoscope. An instance of this is the affection, known by

no more distinctive name than "*senile disease of the macula*," which can with difficulty be detected without a mydriatic, since its sole evidence is some alteration in the pigment, producing small spots in the macular region. The loss of visual acuteness, however, is great, and amelioration is not to be expected. It ought always to be looked for in cases of cataract where one lens remains transparent, since it is usually bilateral, and its presence in the eye with the transparent lens would very seriously prejudice the chances of good sight in the other after the extraction of the cataract. The pathological anatomy of the affection has recently been described [1]. The disease is practically confined to the retina, which is very much thinned in the macular region owing to the more or less total disappearance of the rods and cones, with the corresponding outer nuclei. The pigment epithelium of the fovea shows corresponding changes, but there is no choroiditis properly so called. This description is based on the pathological examination of a single case, and it would be rash to say that a hard-and-fast line can be drawn between these cases and those of central senile choroiditis, in which also the retina is affected, and which were referred to in the *Annual* for 1905.

Sarcoma of the Choroid.—Parsons [2] makes the following important observations on this:—

1. That detachment of the retina occurs earlier than would be gathered from the ordinary text-book descriptions.

2. That, apart from the elevation at the site of the growth, where there is no true *detachment* in the early stages, the detachment manifests itself invariably as a shallow, simple detachment over the lower hemisphere.

3. That the detachment is frequently entirely isolated from the tumour, the intervening retina being in normal apposition to the choroid.

It is therefore of the utmost importance that in all cases of apparently simple detachment of the retina the most careful search for a tumour should be made by thorough investigation of the field of vision, and by thorough examination with the ophthalmoscope, and by oblique illumination with the fully dilated pupil.

Glioma.—One of the most difficult diagnoses that the ophthalmic surgeon has to make is that of *glioma retinæ*. The chief conditions which give rise to the same clinical appearances, says Parsons [3], are (1) Congenital defects due to persistence of the fibro-vascular sheath at the back of the lens; (2) Tubercle of the choroid, especially the confluent type; (3) Inflammatory deposits in the vitreous, with or without detachment of the retina. These conditions are usually grouped together as *pseudo-glioma*.

"The most important points in the differential diagnosis are well set out by Treacher Collins.

"1. *History.*—The history of fits, unconsciousness, attacks of screaming, ear disease, one of the acute specific fevers, syphilis, etc., would be in favour of pseudo-glioma of the third type. Opacity,

noticed soon after birth, points to glioma or pseudo-glioma of the first type. Tubercle may be associated with similar lesions in other parts of the body.

"2. *Appearance of the opacity.*—Glioma exophytum resembles a simple detached retinal showing a smooth surface with the retinal vessels upon it. Glioma endophytum, which is rarer, shows a ragged surface often with hæmorrhages, and having polypoid or free nodules floating in the vitreous. Congenital deposits are usually greyer, and a clear peripheral reflex can often be seen with the dilated pupil. In inflammatory membranes behind the lens the vessels are generally smaller than in glioma."

[In glioma the retinal vessels become smaller towards the periphery, whereas in the case of an inflammatory membrane behind the lens the vessels, proceeding from the ciliary body, become smaller towards the centre.]

"3. *Anterior chamber.*—In glioma the anterior chamber is usually shallow. Deepening of the periphery from retraction of the iris is almost pathognomonic of inflammatory pseudo-glioma, but the chamber may be shallow in these cases also, and is generally so in cases of the first type.

"4. *Iris.*—Posterior synechiæ are presumptive evidence of inflammatory pseudo-glioma, but occur rarely in true glioma. Hyphæma is of little diagnostic significance. Persistent pupillary membrane is suggestive of the presence of other congenital abnormalities, i.e., of pseudo-glioma of the first type.

"5. *Tension.*—Intra-ocular tension is extremely difficult to determine in infants' eyes. If the tension is raised, the evidence is in favour of glioma; if lowered, of pseudoglioma; but it must be remembered that lowering may occur in glioma (*vide supra*), and that increase of tension may be present in the early stages of inflammatory pseudo-glioma.

"Even when every precaution is taken, there is a well-defined group of cases in which I believe it is absolutely impossible to be certain o the diagnosis. I have seen such cases wrongly diagnosed by the best observers. Considering that the life of the patient is at stake, and that the eye is in any case useless as an organ of sight, there can be no doubt that these cases should be treated as glioma."

References.—[1]*Ophth. Rev.* Feb. 1905; [2]*Ibid.* June, 1905; [3]*Clin. Jour.* Mar. 22, 1905.

RETROVERSION. (*See* Uterus.)

RHEUMATISM (Acute). *Robt. Hutchison, M.D.*

Etiology.—The bacteriological investigation of this disease has continued to engage the attention of many workers, and there seems to be a consensus of opinion that the organism now generally known as the *micrococcus rheumaticus* is responsible for its causation. Lewis and Longcope[1] have recorded a fatal case of chorea, endocarditis, and rheumatism, from the blood of which before death they isolated a

streptococcus, which proved to be moderately virulent for rabbits when injected intravenously, and gave rise with the greatest constancy to a multiple arthritis, which was rarely fatal unless complicated by an acute vegetative endocarditis. The onset of the joint affection was only noticeable after a more or less definite incubation period of four to nine days. It usually started with pain and tenderness in the ankle, with limping on moving about. The infection might be localized, or spread to almost all the joints of the body. Small swellings sometimes developed on the muscle tendons. The streptococcus was recoverable from all the affected joints. The organism could not with certainty be differentiated by its morphological and biological characters from the ordinary varieties of *streptococcus pyogenes*. When grown in bouillon for six or eight days and subsequently distilled with sulphuric acid, formic acid could be demonstrated in the distillate. Although the organism was passed through several animals its virulence was little altered. They believe that it is the same as that described by Wassermann, Meyer, Poynton, and Paine, and Walker, but point out the possibility of a streptococcus infection supervening as a terminal event in the fatal cases of rheumatic fever, as except in this fatal case reported, they had never obtained a growth of streptococci from cultures of the blood and joint fluids of cases of rheumatic fever.

Beattie[2] has isolated the organism from the synovial membrane of a girl with acute rheumatism, and recovered it again from the vegetations of an endocarditis in a rabbit. Its microscopical and cultural characters were practically identical with those of the organism described by Paine and by Beaton and Walker. Concerning the relationship of this organism to the streptococci, he writes:— "As to whether it is to be classed as a streptococcus or not generically is a matter of little practical importance, but, fortunately or unfortunately, the term streptococcus has to most people a specific meaning, and the organism which we find in acute rheumatism produces by inoculation results which are entirely different from those produced by an inoculation of the 'streptococcus' in its ordinarily accepted sense. Therefore it seems essential to designate this organism by a special term, such as the 'micrococcus rheumaticus,' proposed by Beaton and Walker, all the more since it has been maintained that this micrococcus which we have isolated is not causal of acute rheumatism, but is probably a streptococcus causal of the terminal infection. Besides, there are points in the cultural characters and vitality of the organism which seem to distinguish it as absolutely from the streptococci, as the pneumococci are distinguished from them. The growth on gelatin appears earlier, and is more abundant. Its more abundant and earlier growth on ordinary agar at 20° C. than at 37° C. is quite unlike what is seen with the streptococci. The very marked acid production in bouillon and in milk, the early coagulation of the milk, and the length of time the organism lives in suitable culture media, are features which distinguish it absolutely from the streptococcus. The results of inoculation in animals are also entirely

different. Even if we admit that the organism can produce suppuration, which is doubtful, ordinarily it does not give rise to pus, but causes in rabbits non-suppurative polyarthritis, endocarditis, etc. These conditions have not been produced by inoculation of what we ordinarily call streptococci.

"We do not claim that because this organism produces endocarditis, therefore it is the causal organism of morbus cordis. What, however, we do claim, is that it can be isolated from cases of typical acute rheumatism; that it can be grown outside the body, there showing characters which are in some respects specific; that on inoculation in animals it produces a combination of lesions which are similar to those of acute rheumatism in the human subject, sometimes specially affecting the joints, sometimes specially the heart, sometimes producing chorea, sometimes producing a combination of these conditions; and that from these lesions the organism can be recovered in pure culture. On these grounds there seems but one conclusion, that this 'micrococcus rheumaticus' is a special organism, and is causal in acute rheumatism."

Treatment.—In recent years attempts have been made to introduce **Salicylic Acid** into the system in other ways than by the mouth. **Oil of Gaultheria** was formerly largely used by inunction, with some success, bnt its penetrating odour prevented its employment to any great extent. **Mesotan,** the methoxy-methylester of salicylic acid, has lately been used in the same way with much better results. The effect of these preparations proves that a comparatively small amount of salicylic acid relieves pain and swelling when made to reach the blood directly from the lymph vessels or capillaries of the skin, compared with the doses required when the drug is given by the mouth. It would appear that salicyl preparations either lose part of their effect in the stomach and intestine, or leave the body in great part without developing that effect. The next step logically is to inject salicylates hypodermically. This was first done by Riegel, who used the salicylate of caffeine and soda with excellent effect. Salicylate of soda alone is not so satisfactory, as it is very apt to cause burning pain at the seat of injection, and even infiltration and inflammation. In spite of this, the pain and swelling of the affected joints are usually greatly relieved.

Similar considerations led Mendel[3] to attempt **Intravenous Injection of Salicylates,** with encouraging results. Any remedy which is to be injected into the veins must not cause coagulation, nor destroy blood corpuscles, nor cause injury to the vessel wall, especially to the endothelium. The injections of the sodium salt alone occasionally caused a little pain, and Mendel found that, by using the **Double Salt of Caffeine and Sodium,** or by adding caffeine to the sodium salt, he obtained the therapeutic effect without pain or irritation, even though a 20 per cent solution was used. This is probably due to the slightly anæsthetic action of the caffeine. It acts, moreover, as a cardiac stimulant, which, of course, is often desirable.

For all intravenous injections certain precautions are essential. The vein used must not be too small, and must be dilated as much as possible. The arm, with the fist tightly clenched, should be allowed to hang down for some time, and then elastic pressure should be applied so as to interfere with the circulation, with the usual results. The vein chosen for injection should now be rubbed with ether, the elastic band being loosened but the arm still kept dependent. Marked hyperæmia occurs, and the elastic band may be reapplied with advantage —in this way even small veins can be dilated, so that it is easy to inject into them. The more fully the veins are distended with blood, the less danger is there of injuring the blood-corpuscles and the endothelium, especially if the band be loosened as rapidly as possible, and a fresh vein chosen for each procedure. Before injection, blood must of course be allowed to rise in the needle in order to ensure that the vein has been entered. After many experiments, Mendel found that the most useful solutions were the following :—

R	Sod. salicyl.	8·0	Or,	Sod. salicyl.	8·75
	Caffeine sod. salicyl.	2·0		Caffeine	1·25
	Aq. dest. ad	50·0		Aq. dest. ad	50·00

For adults, 2 grams were used ; for children, smaller quantities ; and the injections were repeated at intervals of from twelve hours to three days. No ill effects of any kind were observed in the 300 injections which Mendel carried out. No relief from pain was obtained when pain was due to other causes than rheumatism. The first case in which Mendel tried the method was that of a man of about forty, who had kept his bed for a fortnight with severe lumbago, which had resisted large doses of salicylate of soda and aspirin. After a single injection of 0·4 grams of salicylate of soda his pains entirely disappeared, to his great astonishment. He was at once able to walk, and was free from pain until the next day, when it returned slightly, but was removed entirely and permanently by a second injection.

Four other cases of lumbago were cured in the same way. The flying pains, to which rheumatic people are so prone in damp and cold weather, were equally amenable to treatment. Sciatica was not so invariably cured. Recent cases required only two or three injections, but more chronic cases needed longer, and one very chronic case was entirely unaffected. Those cases of joint rheumatism which have little or no temperature, but fleeting polyarticular swellings with pain, were cured by one or two injections. In acute rheumatism, with fever, the temperature was not directly influenced. Pain and swelling of joints disappeared, but the fever remained ; on the following day the same or other joints were usually again affected, though not so severely, and the temperature had fallen to a certain extent ; so after each injection there was a gradual improvement, until after five or six the fever disappeared and the joints ceased to swell.

According to Mendel the effect of these injections upon all rheumatic diseases is so specific that they may be used as a means of distinguishing

obscure cases presenting some of the symptoms and signs of rheumatism. Several such cases are cited.

Intramuscular injections have been employed, but have not been found as satisfactory as the intravenous.

Behr[4] also strongly advocates Mendel's method, stating that its results are excellent, and prompt relief is afforded in nearly all forms of rheumatic affections. A careful diagnosis is necessary, however, for non-rheumatic disorders are not amenable to this plan of treatment, and the effect in rheumatic cases is less pronounced the longer the duration of the trouble has been. The injection should be made with all due aseptic precautions, and care should be taken to see that the presence of the point of the needle within the lumen of the vein is demonstrated by the appearance of a column of blood within the syringe before the fluid is expelled, as the solution gives rise to severe pain if by carelessness thrown into the tissues instead of directly into the vein. He has seen no disagreeable complications attend the method when carefully employed, and recommends it especially where it is of great importance not to upset the stomach, as in treating tubercular patients, for example.

Santini[5] has practised with success **Endo-Articular Injections** of a 3 per cent solution of salicylate of soda in distilled water in cases of acute articular rheumatism. Stringent antiseptic precautions are, of course, necessary, and a very fine needle is used. If there is much distension of the joint it is well to aspirate a little serum as a preliminary. Usually there is little difficulty in finding the way into the joint. In some of the deeper joints, for example, hip and vertebral, one must be content with peri-articular injections. In several cases peri-articular injections afford useful aid to endo-articular ones. From 3 to 4 cc. is, as a rule, sufficient at a time. Obviously the amount of salicylate that reaches the joint by this method is considerably more than would be the case when given orally. Some temporary pain (occasionally severe) is set up, but is soon followed by decided relief. In one case of rheumatism affecting both the knees, one knee was injected endo-articularly and the other treated generally, and the first got better speedily, whilst the reverse was the case in the second. Where salicylates are not tolerated, or inadvisable when given in the usual large doses, endo-articular injection may be used with advantage. Whether salicylates act merely as analgesics or as specific anti-rheumatic drugs is still disputed, but this local action when injected, if confirmed by further experience, may help to decide the question. It is of no use in gonorrhœal or non-rheumatic arthritis.

Crocco[6] speaks very favourably of the external application of **Mesotan** in acute or subacute rheumatism. It is a transparent liquid of penetrating odour, and contains 71 per cent of salicylic acid. It is readily absorbed from the skin, and a salicylic reaction can quickly be detected in the urine. Aspirin may be given internally at the same time, but the author records cases where the external treatment (merely painting the parts once a day and covering with wool) was

quite sufficient to relieve all the symptoms. Striking results were obtained in lumbago. Dilution of the drug with olive oil, and abstinence from friction, to avoid any dermatitis, have already been mentioned in previous issues of this *Annual*.

Martinet[7] states that a combination of **Antipyrine and Sodium Salicylate** is remarkably efficacious in this disease. On account of the pasty mass they form when mixed, it is impossible to dispense them in capsules, and, moreover, the combination is irritating to the stomach. Sodium bicarbonate should always be added, as in the following :—

R	Antipyrine	grams v	Distilled water	grams x
	Sodium bicarbonate	grams vi	Rum	grams xxx
	Sodium salicylate	grams x	Syr. of bitter orange peel	grams cl

M. A tablespoonful as required.

REFERENCES.—[1]*Amer. Jour. Med. Sci.* Oct, 1904 ; *Brit. Med. Jour.* Nov. 12, 1904 ; [2]*Brit. Med. Jour.* Dec. 3, 1904 ; [3]*Ther. Monats.* April, 1904 (Abst. in *Scot. Med. and Surg. Jour.* June, 1904) ; [4]*Münch. Med. Woch.* Nov. 8, 1904 ; [5]*Gaz. deg. Osped.* Aug. 21, 1904 (Abst. in *Brit. Med. Jour.* Oct. 22, 1904) ; [6]*Ibid.* Aug. 14, 1904 (Abst. in *Brit. Med. Jour.* Feb. 4, 1905) ; [7]*Nouv. Rem.* June 8, 1904.

RHEUMATOID ARTHRITIS.

Robt. Hutchison, M.D.

The nomenclature of rheumatism and the allied diseases is, as Poynton[1] states in a recent review of the whole subject, still in a state of confusion. Rheumatoid arthritis, or arthritis deformans, is specially complicated. Some writers consider rheumatoid arthritis to be a definite *disease*, the arthritis of which is stubborn and may or may not implicate the bones and cartilages. Others call this *disease* "arthritis deformans," and group the cases into two main classes : in one the bones and cartilages are not damaged, and this is called by them "rheumatoid arthritis" ; in the other the bones and cartilages are damaged, and this is "osteo-arthritis." Both classes are examples of the *disease*, arthritis deformans, and both may occur coincidently in the same patient. Lastly, there are writers who do not use these terms in the sense that they are conditions of a special disease, but express by them the existence of a stubborn and non-suppurative arthritis. In their writings, such terms will be met with as syphilitic osteo-arthritis, or tubercular rheumatoid arthritis.

There are evidently two difficulties in this nomenclature ; one dependent upon the doubt whether these forms of arthritis are due to one or many causes ; and the other a result of an old classification which attempted to put in a special class those cases in which there were changes in the bones and cartilages.

Goldthwait[2] reports on some work which has been done in Boston during the past twelve years with the object of shedding light on the rheumatoid diseases. Five types of disease have been recognized and studied, and the author devotes his paper to a description of each of these types and to a consideration of their etiology, pathology, and treatment.

1. Chronic villous arthritis, or "dry joint," is a local process with no tendency to progression. This condition occurs most frequently in the knee.

2. Atrophic arthritis is a progressive disease resulting in marked distortion and great crippling, with the essential pathological feature, one of atrophy, in which the joint membranes, the cartilage, the bones, and in the exposed joints, even the skin, all show the change. The disease may attack one or several joints. Its etiology is unknown. Some features suggest a trophic origin.

3. Hypertrophic arthritis may be either a local or a general process, and is characterized by a thickening at the edges of the articular cartilages or at the attachment of the ligaments, forming ridges or nodes which become ossified, and interfere in varying degrees with joint motion.

4. Infectious arthritis is by far the most common, and includes most of the cases commonly spoken of as acute or chronic rheumatism, and as septic arthritis, as well as many formerly spoken of as arthritis deformans. This type of disease apparently results from the presence within the body of some infectious organism, the symptoms being due either to the presence of the organism itself within the joint, or to some toxin produced by that organism in some other part of the body.

5. Chronic gout is less understood than the other types, because much less common, and no attempt is made in designating it to use more than a descriptive term, the pathology being too little understood. In the few cases studied the essential characteristics are the same, the chief ones being deposits of the urate of sodium in the soft structures about the joints, with some bone absorption adjacent to the deposits. The article is excellently illustrated.

Bertram Abrahams[3] considers that the term rheumatoid arthritis as used in this country embraces four different clinical conditions: (1) The children's disease described by Still; (2) An acute disease occurring in young women; (3) The ordinary multi-articular affection of middle-aged women; (4) The chronic malady of the aged known as senile osteo-arthritis. He discusses the relationship of these different forms, and concludes that the disease described by Still in children is an infective process which is in no way related to the other forms. The acute and chronic types met with in young and middle-aged women respectively, he believes to be different phases of the same malady, although in this view he differs from some writers, such as Hale White[4].

The senile form he regards as essentially degenerative, and it may therefore be the result of various factors, acting alone or in combination. Among these is, no doubt, to be reckoned the ordinary type of arthritis deformans, which may pass on into it, just as the large white kidney may,—somewhat rarely perhaps—undergo contraction and fibrosis. In many instances there is no precedent arthritis deformans, and in such cases we have to look to other etiological agencies, in particular old age, as the causes of degeneration. Sometimes it supervenes upon

the chronic joint condition resulting from repeated attacks of acute rheumatism; in fact, it may be almost laid down as an axiom that any diseased joint will, if the patient live long enough, become the seat of senile osteo-arthritis.

Macalister[5], in a post-graduate demonstration of rheumatoid arthritis, also adopts the view that the acute and chronic forms are different stages of the same process. He states that the acute phase may resemble acute rheumatism very closely, but differs from it in the absence of cardiac complications and in a tendency for the joint affection to become chronic. Such cases do not respond to salicylates, and he believes this to be of diagnostic value in distinguishing them from acute rheumatism. He is an adherent of the opinion, now becoming popular, that rheumatoid arthritis is infective in origin, and mentions as possible sources of infection the nose, the genital tract in women, the mucous membrane of the mouth and of the alimentary canal. He also cites examples in favour of the view that defective action of the thyroid plays a part in the production of some cases.

Treatment.—Kolipinski[6] considers that the best results are obtained from three lines of treatment, carried out simultaneously and perseveringly. These indispensable agencies are: a course of **Arsenic** in moderate doses; voluntary **Exercise** to overcome stiffness contracture, and muscular atrophy; and **Superalimentation** for the weakness, anæmia, and loss of weight. Local applications are of but temporary value, and purely anodyne. The best is a mercurial plaster.

References.—[1]*Pract.* June, 1904; [2]*Boston Med. and Surg. Jour.* Nov. 17, 1904, (*New York Med. Jour.* Dec. 3, 1904); [3]*Brit. Med. Jour.* April 22, 1905; [4]*Lancet*, March 18, 1904; [5]*Ibid*, July 23, 1904; [6]*Med. News*, Sept. 3, 1904 (Abst. in *Med. Chron.* Dec. 1904).

RHINOPHYMA. *Norman Walker, M.D.*

Klein[1] states that histologically the tissue is mainly fibrous, loose in character, with large lymph spaces and blood vessels, interspersed with dilated sebaceous glands. There is on the outside stratified epithelium, but this contains fewer layers than in the normal skin. In advanced cases he removes the central part by an elliptical incision, sutures the edges, and only resorts to paring over the alæ of the nose. Hæmorrhage is easily controlled by means of adrenalin, or the application of forceps for a few minutes.

Dubreuilh generally uses the thermo-cautery, but when the knife is employed he makes a median incision and dissects each half off; the finger being put in the nostril when paring. Bleeding is arrested by means of the thermo-cautery, and wet boracic dressings are applied afterwards. Suppuration generally occurs owing to the septic crypts in the sebaceous glands. At the end of the second week the granulation tissue should be skin-grafted.

References.—[1]*Ann. of Surg.* May, 1904; [2]*Ann. de Derm. et de Syph.* Nov. 1903.

RICKETS.

G. F. Still, M.D.

The etiology of rickets is an old problem, but remains unsolved. In this country the view put forward by Cheadle on very strong evidence, that deficiency of fat in the food is the chief factor, has received some support. The present writer[1] has stated that his own clinical observations support the view that deficiency of fat-assimilation, whether from paucity of fat in the food, or from digestive disturbance interfering with its absorption, is the chief dietetic factor; and he points out that the assimilation of one food-constituent is influenced by the proportion of other food-constituents present in the diet, and there are facts which suggest strongly that excess of carbohydrate, whether soluble or insoluble, interferes with the assimilation of fat. Whilst, therefore, deficiency of fat is in itself a serious fault, it becomes more harmful when associated with excess of carbohydrate; and a proportion of fat which is just sufficient to prevent disorder of nutrition, particularly rickets, may become insufficient when its assimilation is hindered by an associated excess of carbohydrate. If the occurrence of rickets be taken as the index of deficiency of fat in the diet, then it would appear that for an infant 6 or 7 months old 1·5 per cent of fat is not sufficient to prevent rickets, and even 2 or 2·5 per cent may not be sufficient, if therewith the proportion of carbohydrate is excessive. On this view that any interference with digestion preventing absorption of fat may produce rickets, the occurrence of rickets on a diet containing excess of fat becomes quite intelligible, and cases have recently been reported by Holt[2]. On the other hand, Herter[3] failed to produce rickets in pigs by feeding them on fat-free milk; but children are not pigs; and it is not safe to argue from the metabolism of one animal to that of another, even when they stand much nearer to each other in the evolutionary genealogical tree than pigs do to children. Freeman[4] states that climate and a deficient supply of oxygen are important factors, and says that rickets is hardly known in hot climates, because both mother and child live much in the open air. Rickets flourishes more in temperate and cold regions. This climatic distribution is thought to be opposed to the suggestion that an intestinal toxæmia or some microbic infection is the cause of rickets, for such causes would act more in hot climates than in cold. He mentions also the view of Zweifel that deficiency of hydrochloric acid in the gastric juice is a factor. Most observers have denied that heredity plays any part in the production of rickets; if by heredity is meant the occurrence of the disease in parent and child. But Seigert[5] takes the extreme opposite view, that heredity plays a more important part than even the hygienic environment; and thinks that when there is a strong family history of rickets the disease is likely to occur in the infant while still at the breast.

Amongst the symptoms of rickets, pain in the limbs has been considered a prominent symptom by some observers. But Czerny and others have denied its occurrence, and it is generally held that any definite pain, especially with tenderness, is probably referable

to some degree of scurvy. Zanetti[6], however, has made some clinical investigations which lead him to believe that all rachitic children suffer pain, which at times is severe: the child may be so tender that it lies with flaccid limbs, and the slightest touch causes pain. The pain, he says, is only in the bones, not in other tissues, and is not proportionate to the severity of the rachitic lesions. Probably most authorities would agree with Colman[7], who says that whenever a child suffers from bone tenderness, especially if it is rickety, the possibility of scurvy should be borne in mind.

The shape of the fingers in rickets has attracted attention recently. The middle of the diaphysis appears thickened, so that each phalanx has a spindle-shaped appearance. Neurath[8] described this, and considered that it was due to a periosteal infiltration. It is seen especially during the first year of life, and is thought to be pathognomonic of rickets. Koplik[9] refers to the same condition, and finds that the fingers sometimes show bowing as well as thickening of the diaphysis.

The relation of rickets to various convulsive disorders, such as laryngismus stridulus, tetany, and general convulsions, has long been recognized. Cautley[8], however, asserts that undue importance has been attributed to rickets in this relation. Rickets cannot even by the craniotabes which results from it, explain the convulsive phenomena, the explanation of which lies in the dietetic and other conditions which have given rise to the rickets, not in the rickets itself; rickets is frequent, but comparatively few rickety children have convulsions; at the most rickets can only be regarded as a predisposing cause, chiefly through its complications, but partly through impaired nutrition, and consequently diminished control of the nervous system. Thomson[9] on the contrary regards rickets as by far the most important of the predisposing causes of convulsions, and so far from attributing the convulsions merely to complications of rickets, he says that the tendency to convulsions in rickety children rapidly disappears under antirachitic treatment, even although obvious sources of peripheral irritation remain. The rickets in these cases is generally in an early and progressive stage.

Treatment.—The treatment of rickets is mainly dietetic. Variot[10] points out that the children of the poor, if carefully fed with sterilized cow's milk, are not more liable to rickets than the children of the well-to-do; he believes that by an extension of the milk-dispensary (*Gouttes de Lait*) system the prevalence of rickets might be greatly reduced. Spietschka[11] recommends **Phosphorated Cod-liver Oil**, in the proportion of phosphorus gr. $\frac{1}{4}$ to $\frac{1}{2}$ a pint of the oil. Thomson (loc. cit.) advises for rickets with nervous manifestations that cod-liver oil, with or without phosphorus, should be given; and a regular **Cold Douche** should be used once or twice a day, a measure which has a powerfully soothing effect. Fürst[12] records observations on the value of **Phytin**, a compound of phosphorus from plants. In the form of a lozenge made up with sugar of milk it is easily administered to

children, to whom it should be given in doses of 5 to 15 grains at from 2 to 6 years; it may be given 3 to 4 times daily before meals. Migliaccio[12,13] recommends **Lecithin,** administered by intramuscular injection, 30 cgrams made into an emulsion with normal saline sulution, and injected every alternate day. In lecithin, he says, the phosphorus is given as an organic compound, and in no other form can the organism utilize phosphorus. Lecithin also improves the digestion, and so removes one of the causes which play a chief part in rickets. Lecithin given thus produces no disturbance which may necessitate suspension of the treatment, as often happens when phosphorated cod-liver oil is used. He does not mention the totally unnecessary pain inflicted upon children who can be treated just as effectually by drugs administered by the mouth.

REFERENCES.—[1]*Pract.* Oct. 1905; [2]*Arch. Ped.* Jan. 1905; [3]*Ibid,* April, 1904; [4]*Ibid*; [5]*Jahrb. für Kinderh.* vol. viii. p. 129; [6]*Pediatr.* Sept. 1904; [7]*Pract.* Oct. 1905, p. 533; [8]*Clin. Jour.* Sept. 6, 1905; [9]*Pract.* Oct. 1905; [10]*Gaz. des Hop.* 1904, p. 885; [11]*Jahrb. für Kinderh.* Mar. 1904; [12]*Centr. f. Kinderh.* Nov. 1904; [13]*Pediatr.* Oct. 1904.

RINGWORM.

Norman Walker, M.D.
F. Gardiner, M.D.

Colcott Fox[1] gives an excellent summary of the modern attitude towards this condition in a recent paper. The two great families, the microspora and the trichophyta, each have special culture characteristics, and "as with other plants, each country has its own particular ringworm flora, though we may meet occasionally with specimens introduced from other countries." They elaborate diastases which perform the important function of altering surrounding substances and rendering them fit for food. "The fungus acts firstly and chiefly by dissolution of the epidermis and hair cells in which it grows, and secondly, according to d'Este Emery, by the formation of a toxin which induces some inflammation of the surrounding parts." The degree of irritation varies enormously with different species, but there is little evidence of variation in the virulence of any special fungus. When derived from animals, the condition is more aggressive, and it has been found that certain fungi from animals are pyogenic, and set up a pustular peri-folliculitis which when agminated produces *kerion.* Giant and epithelioid cells have been found in some phlegmons.

TREATMENT.—Charmeil[2] recommends the following:—

R	Proof spirit	℥x	Tinct. cantharides	ʒiv
	Spt. lavandul.	℥iv	Choral hydrate	ʒi
	Hydrag. perchlor	gr. xii		

To be rubbed on the whole scalp twice weekly.

This is but a variation of an old treatment which has long been unsatisfactory, as no amount of rubbing gets down into the follicles or into the hair. Aldersmith[3] points out that as far back as 1893 he stated that the cure of ringworm rested on a means of producing a temporary alopecia. He narrates a case of the small-spored, patchy type which he cured in eleven weeks by using continual applications

of saturated solution of boric acid in spirit and ether, and so removing the hair. Others have used depilatory powders with the same end in view, but neither this nor Aldersmith's method given above have been certain in their results, and so have fallen into desuetude.

From the experience of X-ray treatment in hypertrichosis and nævus pilosus, it was an easy transition to their application in such a condition as this. Many have claimed priority, but he would be a bold man who would attempt to make the award. Rather it must be considered as a general advance all along the line of the workers in this branch. Freund suggested it in 1896, Belot has been doing so for the last two or three years, and we have ourselves used the method since 1902, but among all we must admit that to Sabouraud belongs the credit of first putting the treatment on a scientific basis. The subject was mentioned briefly in last year's *Medical Annual*, but much more work has been done since. Deriving his current from a static machine with 10 or 12 plates, Sabouraud uses a regulating tube with an alternate spark gap of 10 cms., this being kept uniform by heating the platinum regulator with a Bunsen flame. The tube is enclosed in a metal case with an opening towards the patient's head, and so placed that the distance of the head from the anode shall be 15 cms. An iris diaphragm permits the size of the opening to be varied. A pastille of barium platino-cyanide is kept at 8 cm., and when this has turned to a definite fawn colour the exposure is terminated.

A scalp so exposed shows nothing until the seventh day, when slight, scarcely visible erythema occurs, and from the fifteenth day onwards the hairs begin to fall out all over. The hair is not generally fully renewed till the end of three months, which is advantageous, as it tends to prevent re-infection. Each patch to be treated is first ringed with tincture of iodine, and then the hair is clipped close. All the patches should be treated on the same day, and if there are more than five the whole scalp is usually depilated. Sabouraud uses six large circles, two on the temples, one on the vertex, two on the parietals, and one on the occiput, each being marked out by a circle of lead, and exposed seriatim. Thereafter an oil of cade ointment (ol. cad. 10, lanolin 25) is rubbed in every night. In the morning the whole head is washed with soap and water and painted with

R Tinct. iodi 10 Alcohol (60 %) 90

This prevents reinfection of the hairs.

From his experience in the Ecole Lailliet, Sabouraud[4] concludes that whereas formerly two years was the average time required for a successful result, that has now been curtailed to three months, and the cost per child, which used to average 2,000 francs, is now reduced to 260. It must always be kept in mind that the X-rays have no effect on the fungus itself, and that unless carefulness in antisepsis is employed, more harm than good may result.

Oram[5] adheres to the older methods, and gives ten minute exposures twice weekly at six inches distance from a tube having an alternating spark gap of four to six inches.

Batten[6] gives about six exposures in eleven days, each lasting ten minutes, and protects the head by a close fitting boy's cap coated with white lead in which holes are cut corresponding to the patches. He uses a 1 per cent **Resorcin Lotion** till the hair falls out, and then employs an antiseptic ointment. He has never seen any case of reinfection.

Macleod[7] at first succeeded with a tube working with a spark gap of $3\frac{1}{2}$ inches and allowing $\frac{1}{2}$ ma. in the secondary circuit. With this he could produce a defluvium from 15 minutes' exposure. Later he found this method less satisfactory owing to new tubes not being so efficient as his first. He has consequently devised a rather elaborate outfit; the addition he considers important, being a speed counter attached to the interruptor (a dip type). He finds that when the following details are attended to he gets the desired result: (1) A tube of such tension that the rays from it show 3 or 4 degrees of penetration as indicated by the radiometer; (2) A spark gap of about 10 cm.; (3) A current of about ·4 ma. in the secondary circuit; (4) About 16,000 interruptors of the primary current. The patient is placed 15 cm. from the anti-cathode, and an indicating "pastille" is used to give the "teinte" as a further means of correction.

One would hardly have thought that the number of interruptions would be much of a guide, because, with the depth of the dip, amperage varies greatly, and on this, as also on the voltage in the primary current, much more depends than is indicated by Macleod's paper.

Whatever details are followed, the essential point is to produce complete baldness of the diseased area, and no one method has yet attained perfection. The treatment is undoubtedly valuable, and a great advance on previous methods, but, like all powerful remedies, requires to be used with much discrimination.

REFERENCES.—[1]*Clin. Jour.* Oct. 25, 1904; [2]*Med. Rec. New York,* Dec. 31, 1901; [3]*Brit. Jour. of Derm.* July, 1905; [4]*La Presse Méd.* Dec. 28, 1904; [5]*Dublin Jour. of Med. Sci.* Aug. 1905; [6]*Arch. of Röntgen Rays,* Aug. 1905; [7]*Pract.* May, 1905; [8]*Brit. Med. Jour.* Sep. 16, 1905.

RODENT ULCER. *Norman Walker, M.D.*

In a paper on the treatment of the epithelioma of the skin, Leredde[1], in *Revue Pratique,* January, 1905, discusses the relative merits of curetting, excision, caustics, chemical and actual, and radiotherapy. He concludes that the three which should be preserved are excision, curettage followed by the thermo-cautery, and radiotherapy. The advantages of excision are the definite and rapid results; the inconveniences are the necessity of going widely beyond the disease and the formation of scars in inconvenient situations. The advantage of curettage and cauterization is that they can be applied by anyone. The disadvantages are the impossibility of applying them to all cases, the greater likelihood of recurrence, and the unsatisfactory æsthetic results in many cases. The advantages of radiotherapy are the perfection of the æsthetic results, and the preservation of the healthy tissues. It may be taken as settled that if properly applied it always results in definite cure. The inconveniences are that it cannot be

applied by everyone. When epithelioma has passed the lymphatic barrier excision is the only cure.

Mibelli reported to the International Dermatological Congress, September, 1904, several cases treated by **Arsenious Acid** very much after the method of Czerny and Truneek. Out of 20 cases 15 were apparently completely cured; of the 5 remaining only 1 failed to respond to the method. The arsenic was applied in various forms:—

R	Ac. arsenios.	1	Water and Alcohol	āā 25
R	Ac. arsenios.	1	Gelatin	6
	Water	93		
R	Ac. arsenios.	1	Water	50
	Alcohol	31	Ether	20
R	Ac. arsenios.	2	Gelatin	3–5
	Water	64		

He got the best results with the alcohol-ether application.

This condition, which is so satisfactorily treated by X-rays, is also amenable to treatment by **Radium**; indeed, cases are recorded where this latter remedy succeeded after the failure of X-rays. Manby[2] records three cases affecting the face which disappeared under this remedy. **Fluorescent Light Treatment,** as mentioned under tuberculosis, in 9 cases treated by Jesomek[3], produced improvement in all but one.

References.—[1]*Rev. prat. des Mal. ad. Cut.* Jan: 1905; [2]*Brit. Med. Jour.* July 1, 1905; [3]*Munch. Med. Woch.* June 7, 1904.

ROSACEA. *Norman Walker, M.D.*

Lloyd[1] considers that too little attention is paid to nasal conditions, as etiological factors in this condition. Polypi, enlarged turbinates, and hypertrophic rhinitis act in many cases through pressure on the septum. All his cases improved when this was attended to. Strassmann[2] has employed **Radium** in one case successfully, after four weeks' treatment and the production of superficial erosions.

Leredde[3] reports that he has had in many cases excellent results from **Vegetarianism.** As an addition to the strict vegetarian diet, he allows two fresh eggs in the day and mild cheese. Wine is to be replaced by water. On this treatment 8 out of 10 cases have benefited, improvement is generally apparent in a month, and is marked in two or three months. He commends this instance of the effects of diet to the consideration of dermatologists *on the other side of the Rhine.*

References.—[1]*Brit. Med. Jour.* Jan. 14, 1904; [2]*Arch. f. Derm. und Syph.* No. 71, p. 419; *Brit. Med. Jour.* July 22, 1905; [3]*Revue Pratique.* May, 1905.

SALINE SOLUTION. *Priestley Leech, M.D., F.R.C.S.*

Salt solutions of various strengths have been employed by various surgeons, without considering whether such solutions were isotonic with the blood. F. S. Matthews[1] says that in venous infusion, subcutaneous injection, or washing-out the peritoneal cavity in septic peritonitis, it is better to use a solution isotonic with the blood. In

place of " normal " saline solution he prefers to use the word " physiological " salt solution. His conclusions are :—

1. Theoretically we cannot make a perfectly physiological salt solution, though we can make one to answer every practical purpose.

2. Hypodermoclysis is preferable to intravenous infusion when carefully prepared solutions are not available, as in an emergency.

3. The water used should be clean, if possible filtered, but not necessarily distilled.

4. Table salt can be used for an emergency solution. This contains as a rule, beside sodium chloride, calcium as a chloride or sulphate and magnesium similarly combined.

5. An emergency solution should contain as nearly as possible 138 grams of sodium chloride to the quart.

6. Where large quantities of salt solution are used, it is convenient to make the " physiological " solution, by adding a measured quantity of a concentrated stock solution to sterile water. Where it is needed in small quantities it is convenient to have bottles prepared containing the chlorides in proper quantities to make a physiological solution when added to a litre or quart of water. Measuring out salt in a teaspoon is too inaccurate.

7. In an emergency accuracy is not essential, especially if but one infusion be given. Harm can be done if large and frequent intravenous infusions are used which are not " physiological." A chill and rise of temperature simulating a malarial paroxysm have frequently been noted after infusion. Cushing suggests that the cause may be the same as in malaria, viz. a destruction of red cells.

8. After hæmorrhage, the purpose of an infusion is to supply the vessels with fluid. If the solution is used too dilute it is only partly retained, and is lost through skin and kidneys.

9. In septic cases infusion is certainly indicated if fluid cannot be absorbed through the usual channels. Much has been said in favour of infusion in order to dilute poisons, and to hasten the elimination of bacteria and poisons through the kidneys. In so doing it is to be remembered that the anti-bodies are equally diluted, and that the benefit can only apply to soluble poisons when not already in combination with tissue cells, and under these circumstances repeated infusions may be needed.

10. When large quantities of fluid are used in the peritoneal cavity, they should contain calcium, potassium, and sodium in the proper proportions.

11. There seems to be no valid reason for administering infusions or peritoneal irrigations at a temperature higher than that of the blood ; of course the infusion fluid cools several degrees in passing through the tube to the veins.

12. Every surgeon should supervise the making of the salt solution which he uses. The two following solutions seem to meet the indications as far as we know them, for a " balanced " and " alkaline " " physiological " solution respectively :—

(*a*)	Sodium chloride	·9 per cent	Calcium chloride	0·2 per cent
	Potassium chloride	0·3 ,,	Water	100 ,,
(*b*)	Sodium chloride	·75 per cent	Water	100 ,,
	Sodium carbonate	·25 ,,		

The first is used for wound irrigation. There is a good bibliography given.

REFERENCE.—[1]*Ann. Surg.* Aug. 1904.

SARCOMA OF THE CHOROID. (*See* RETINA *and* CHOROID.)

SCABIES. *Norman Walker, M.D.*

In the case of babies, Gaston[1] remarks that the friction and irritant treatment suitable for adults cannot be used, as they may produce eczema and impetigo in their more sensitive skins. The method he suggests is the following :—

1. An alkaline bath containing 10 to 20 grains of **Potass. Carbonatis** is given at night, and the patient is then soaped with

R	White soap	17	Olive oil	6
	Potass. sulphurata	80	Oil of thyme	·8

2. After the bath the patient is dried and

R	Camphorated chamomile oil	100	Styrax ointment	20
			Balsam of Peru	5

is rubbed in.

3. Next day, bath as before with the soap.
4. Apply on the following day

R	Sulphur præcip.	1	Lanolin	15
	Borate of soda	2	Oxide of zinc	10
	Vaselin	15		

A starch bath is also given every day. If eczema or impetigo has already resulted, use 5 to 10 per cent of balsam of Peru in olive oil, and then an ointment of

R	Precipitated sulphur	25	Glycerin of starch	25
	Carbonate of soda	2	Oil of cade	5

along with soapy or starch baths as above.

REFERENCE.—[1]*Gaz. des Hôp.* Sep. 2, 1905.

SCARLET FEVER. *E. W. Goodall, M.D.*

R. W. Marsden[1] advocates the bath treatment in scarlet fever, as well as in typhoid; "**Short Cold Baths** frequently repeated give the greatest benefit, so that when there is no danger of producing cardiac failure, they, or such substitutes as the **Cold Pack with Friction**, the cold mitten or ice rub rapidly performed, are to be adopted. In doubtful cases, however, and in young or weakly patients, the lukewarm bath is to be preferred, and its duration should be short, (10 to 15 minutes), since a prolonged tepid bath causes a weak pulse, and is decidedly injurious. Whatever the method used, it is necessary that the application should be regularly and frequently repeated

during the period of pyrexia or marked toxæmia, and that each application should be adequate to the severity of the case."

From a paper by Jerecky[2] on the ear complications of scarlet fever and their treatment, we make the following extracts concerning the treatment at an early stage:—For the pain of middle-ear disease the best treatment is **Irrigation with Hot Water,** using a pint to a quart in a douche jar about a foot over the head. A hypodermic injection of **Morphia** will sometimes shorten an attack. **Leeching of the Tragus** is useful in some cases. Watery solutions of **Cocaine, Atropine,** or **Tincture of Opium** instilled into the canal occasionally give relief. Oil should never be used. Saturating a piece of cotton with **Chloroform** and blowing the vapour into the meatus will often relieve pain. If the pain is not relieved by any of these measures the tympanic membrane will probably be found to be bulging, and paracentesis should be performed at once. A general anæsthetic should be given to allow of this being done, at any rate in adults and older children; ethyl chloride or nitrous oxide preferably being employed. Infants can be held. Local anæsthetics are unsatisfactory. The incision should be made from the bulging portion of the membrane through the postero-inferior segment. Jerecky recommends at the same time incision of the mucous membrane of the internal tympanic wall and the postero-superior canal for one-fourth of an inch.

If spontaneous rupture of the membrane has occurred, examination should be made to see whether drainage is sufficiently free; if not, an incision must be made from the perforation. After operation irrigate with 1 in 5000 bichloride of mercury solution, and pack the canal lightly with sterile gauze. The ear should be cleaned, dried, and packed daily with strips of gauze.

References.—[1]*Med. Chron.* Sept. 1904; [2]*Med. Rec.* Feb. 25, 1905.

SCHISTOSOMUM JAPONICUM. (*See* Fluke.)

SCIATICA. *Purves Stewart, M.D.*

In cases of pain in the region of the sciatic nerve, we must never be content with a diagnosis of "sciatica." We should always ask ourselves the further question, whether the case is one of sciatic neuralgia, or of sciatic neuritis, or perineuritis. Otherwise the diagnosis is incomplete and the treatment is unlikely to be satisfactory.

Sciatic neuralgia is usually a disease of middle life, and affects men more often than women. A gouty diathesis is common. Less frequently diabetes is present. The pain in sciatic neuralgia is usually intermittent, and there are usually the characteristic "tender points" at certain spots, notably the posterior iliac spine, the sciatic notch, the back of the knee, below the head of the fibula, etc. And the patient with sciatic neuralgia not infrequently has neuralgia in other parts. No true anæsthesia, however, is present, nor do we find evidence of muscular atrophy below the knee, as in many cases of true neuritis. The cremasteric reflex is sometimes exaggerated on the affected side.

In sciatic neuritis or perineuritis, on the other hand, there is

tenderness all along the nerve-trunk, not merely at the tender points; passive stretching of the nerve causes acute pain; muscular atrophy and blunting of sensation may be present in the sciatic territory, and the temperature of the affected limb is usually lower than normal. The ankle-jerk is diminished or absent, unlike a mere neuralgia, where the deep reflexes are unaffected.

The most frequent exciting cause of sciatic neuralgia and neuritis is exposure to cold and damp, as from sitting on damp grass. Compression of the nerve, whether from intra- or extra-pelvic causes, must also be borne in mind.

TREATMENT.—As to this, in acute cases, whether of neuralgia or neuritis, **Rest** is essential. The patient should be in bed, with a long, well-padded splint from the hip to the foot. The bowels should be thoroughly opened by a **Mercurial** and **Saline Purge**, and the more urgent pain may often be relieved by a dose of **Aspirin** or **Phenacetin**. Harburn and Armstrong[1] recommend the following mixture:—

R	Aspirin	gr. 6	Quinine salicyl.	gr. 2
	Phenacetin	gr. 5	Codeia	gr. ¼ to ½

We should avoid morphia, except in uncontrollable agony, lest the patient acquire the drug-habit.

In subacute and chronic cases of sciatic neuritis, more active physical treatment is advisable. **Massage**, which in the acute cases is contra-indicated, may now be employed. And here **Hydrotherapy** is of the greatest value. These patients do well at such places as Buxton or Droitwich. And remarkably good results, in a number of obstinate cases, have followed from a three weeks course of **Hot Mud-baths** and massage at Acqui, in the north of Italy. At Buxton, Harburn employs the **Half-combined Vapour Bath**, in which the patient sits up to his waist, the upper parts of the body not being exposed to the hot vapour. The vapour, at a temperature of 115° F., is applied for ten or fifteen minutes, after which the patient sits in a hot water bath at 95° F. for eight minutes, during the last three minutes of which a **Hot Under-Current Douche** at 102° to 110° is applied to the affected limb. Besides such hot applications, **Electricity**, in the form of the constant current or the galvanic bath, is very soothing, and sometimes **Counter-irritation** by blisters or the thermo-cautery hastens the cure. In intractable cases of true neuritis or perineuritis, it may be necessary to cut down on the nerve and forcibly stretch it, or dissect off its adhesions; but cases requiring such measures are relatively few.

REFERENCE.—[1]*Med. Press*, Sept. 28, 1904.

Robt. Hutchison, M.D.

Lange[1] describes a plan which he has found prompt in giving relief in intractable cases. It consists in injecting a considerable quantity of fluid into the nerve itself, and is carried out as follows: The solution used is 1 in 1000 of **β-Eucaine** in 8 per cent salt solution, sterilized by heat. The point of exit of the nerve from the sciatic foramen is located and the superficial parts are anæsthetized with the solution in a syringe

provided with a long needle. The needle is then carried deeper into the tissues down to the nerve, which is situated at a depth of about 7 cm., and is not difficult to strike, as it is over 1 cm. in width. The course of the needle through the skin and muscle is not painful, but as the nerve sheath is entered the patient gives a convulsive jerk. This indicates that the nerve has been reached, but the pain lasts only a moment, as the fluid is at once injected, 70 to 100 cc. being forced in quite rapidly. The patient is told not to lie on the affected side for some time after the injection, and the feeling of tension produced usually disappears after a few hours. In some cases the injection must be repeated after several days. A rise in temperature was observed in some of the cases, but this promptly subsided. The author's cases are eleven in number, and in five the treatment was effectual, twice after a single injection, and three times after two injections; another case was doubtful; four were improved, and one was not influenced. Although the number of cases is small, the prompt and complete cures obtained in bed-ridden patients, whose sufferings had not yielded to any of the ordinary anodynes, leads the author to publish his results in the hope that others will make use of it in order to determine the measure of its efficacy.

REFERENCE.—[1]*Münch. Med. Woch.* Dec. 27, 1904.

SCURVY (Infantile). *G. F. Still, M.D.*

According to Colman[1] this disease is one of modern times, and is attributable to conditions arising from over-civilization; but what the actual element lacking in scurvy-producing food may be, is at present unknown. He thinks it probable that in addition to the negative factor, the lack of some element in the diet, there is also a positive one, namely some toxic effect of food taken; and an argument in favour of this is the fact that in cases of starvation due to privation, disease, or voluntary fasting, scurvy does not occur. He states also that, so far as he knows, scurvy has never been observed in an infant that was entirely breast-fed. Out of 25 severe cases, 19 were taking some kind of dried infants' food as their staple diet, 7 of these had also some fresh milk; the remaining 6 were on milk humanized, sterilized, or boiled for a long time. Of 7 cases recorded by Comby[2] 5 were fed on humanized milk, 2 on sterilized milk. It may be noted that "humanized" milk, sold as such, is nearly always also sterilized. It is interesting to note that Comby in seven years has apparently only met with 7 cases of infantile scurvy; which would suggest that this disease is much less frequent, or less often recognized, in France than in England.

The painful swelling of the limbs may appear so suddenly as to give rise to a mistaken idea of traumatism. Colman cites two cases in which nursemaids had been blamed for supposed roughness or carelessness in handling the baby. The immobility of the limbs, especially the legs, for these are much more often affected than the upper limbs, may be so marked as to lead to a diagnosis of infantile paralysis.

Purple swelling of the gums is said to be rarely entirely absent if the teeth are through. Orbital hæmorrhage, sometimes causing proptosis, is not a very rare symptom. Snow[3] states that some orbital swelling or protrusion of the eyeball was found in 49 out of 340 cases of scurvy collected by the American Pædiatric Society; and Heubner noted orbital hæmorrhage in 4 out of 65 cases. Raw[4] states that pyrexia, 101 to 102° F., is often present, especially when the extravasation causes tension under the periosteum. He records a case in which three of the long bones showed spontaneous fracture in scurvy, and the case was the subject of a coroner's enquiry owing to grave allegations of neglect and injury, which were entirely cleared away by the finding of the lesions of scurvy at the post-mortem examination. The frequency of hæmaturia is noteworthy; it may be of importance in diagnosis.

Diagnosis.—The conditions with which infantile scurvy is confused are acute rheumatism, traumatic hæmorrhage or fracture, infantile paralysis, hip disease, neuritis, the epiphysitis due to syphilis (which however, as Colman points out, hardly ever occurs as late as six months; whereas infantile scurvy hardly ever occurs before six months), acute necrosis, abscess, and even new growth.

Prognosis.—Colman states that under antiscorbutic diet the acuteness of the pain and tenderness pass off in twenty-four hours, although some periosteal thickening may remain for some weeks; the spontaneous fractures unite with great rapidity, and the child grows up quite strong and healthy. In severe cases, where the diet has not been rectified, anæmia and cachexia increase, and death may occur from exhaustion or some intercurrent disease, such as broncho-pneumonia.

Treatment.—Raw (loc. cit.) recommends Cheadle's treatment by a thin cream of powdery steamed potato well-beaten up; and would give lemon juice or orange juice in ½-teaspoonful doses three or four times a day. Raw meat juice, he says, in small quantity is of value. He considers it necessary to give a small dose of **Dover's Powder** to relieve the pain, and that the child's body should be protected from the weight of the bedclothes, and from all unnecessary handling which causes acute pain. Colman recommends steadying the limbs by sand-bags, or by a loose casing of sheet-lead. For the stomatitis he recommends a weak **Peroxide of Hydrogen** lotion.

References.—[1]*Pract.* Oct. 1905; [2]*Arch. Méd. des Enf.* Oct. 1904, p. 592; [3]*Arch. Ped.* Aug. 1905; [4]*Pract.* Dec. 1904.

SEA-SICKNESS. *Purves Stewart, M.D.*

A year never passes without some new remedy being forthcoming to overcome this popular and most distressing malady. The subject was discussed by Hutchison in last year's *Medical Annual* and by the present writer in 1904, and the present note must be taken as supplementary to those articles. Corning[1], from a study of the vertigo and nausea produced on himself by sitting in a rapidly revolving

chair, found, after trying various drugs, that **Hyoscine** had the most decided effect in diminishing the vertigo, whilst the nausea was relieved by **Resorcin.** If in addition he took some **Opium,** the result was total absence of nausea or vertigo in the revolving chair. To put his remedies to the test in the treatment of sea-sickness, the enterprising author took a voyage, on a steamer selected specially for its dilapidated condition and its likelihood to induce sea-sickness on the smallest provocation. He applied his remedies not only to himself but to 12 of his sea-sick fellow-passengers. Of these, 10 were cured, 2 were benefited, and 1 was apparently unaffected. He recommends a tablet containing from gr. $\frac{1}{200}$ to gr. $\frac{1}{80}$ (ordinarily gr. $\frac{1}{150}$) of **Hyoscine Hydrobromide,** together with **Opium** gr. $\frac{1}{2}$. Ten minutes later **Resorcin** gr. 3, with **Nitroglycerin** gr. $\frac{1}{100}$. If necessary, after 3 or 4 hours, the following tablet may be added :—

R	Morphine	gr. $\frac{1}{2}$	Strychninæ sulph.	gr. $\frac{1}{60}$
	Ext. cannabis ind.	gr. $\frac{1}{4}$	Resorcin	gr. 1
	Nitroglycerin	gr. $\frac{1}{100}$	Cocaine hydrochlor.	gr. $\frac{1}{6}$

These observations are interesting, though the last prescription, it may be objected, is somewhat of the blunderbuss type.

Reference.—[1]*New York Med. Jour.* Aug. 13, 1904.

SEBORRHŒA. *Norman Walker, M.D.*

Bulkley[1] has written a suggestive comparison of the statistics of seborrhœa and its relations to other skin affections. In his private practice, 9 per cent of the cases were seborrhœic, and of 596 alopecias (including areata) there were 273 in which seborrhœa played a prominent part. It is equally common in both sexes, affects all ages, but 53 per cent of the whole were between twenty and forty years of age. Over 63 per cent of his alopecia cases were, he considers, due to dermatitis seborrhoica. For the scalp he prefers a lotion of

R	Resorcin	ʒi–ii	Glycerin	ʒii–iv
	Spt. vini rect.	ʒii–iv	Aq. rosæ	ad ʒiv

For the chest he uses

R	Resorcin	gr. xx–ʒi	Ung. aq. ros.	ʒi
	Sulph. præcip.	gr. xx–ʒi		

The addition of 1 or 2 per cent of carbolic acid aids the action, and if there is much itching, ichthyol, oil of cade, or tar may be used.

Saalfield[2] reports that **Thigenol** is specially useful in seborrhœic inflammations. Thigenol is a compound of iodine and ichthyol; it is dark brown, syrupy in consistence, inodorous, and soluble in water, alcohol, or glycerin.

Hodara[3] recommends the following in seborrhœic eczema :—

R	Lanolin		Glycerin	
	Vaselin	āā 30·0	Sulph. præcip.	āā 10·0
	Powdered sugar	20·0	Chrysarobin	1–2·0

References.—[1]*Med. Rec.* May 18, 1905; [2]*Jour. Mal. Cut. et de Syph.* Nov. 1904; [3]*Gaz. des Hôp.* July 1, 1905.

SHOCK (Surgical). *Priestley Leech, M.D., F.R.C.S*

This formed the subject of the Hunterian Lectures by Lockhart Mummery[1]. The two great dangers of any big surgical operation are sepsis and shock. Sepsis has been largely eliminated; and efforts must be made to do the same with shock.

The most satisfactory instrument for measuring the blood-pressure is the Riva-Rocci sphygmometer in one or other of its different forms; its great advantage is that it can be very easily used, and is simple in construction. It is best to use a broad armlet, and be satisfied with the systolic pressure, which is accurately recorded by the Riva-Rocci type of instrument. A considerable fall in the arterial blood-pressure usually results in one of three abnormal conditions or morbid physiological states: syncope, shock, or collapse. Mummery's definitions of these three conditions are as follows: *Syncope* may be defined as a sudden cessation of the cerebral circulation, or cerebral anæmia. *Shock* is the condition resulting from a fall in general blood-pressure due to exhaustion of the vasomotor centres. *Collapse* is the condition resulting from a fall in general blood-pressure due to inhibition of the vasomotor centres, or a loss of circulating fluids in the vessels. Surgical shock is the result of a general vasomotor paralysis, the primal cause being exhaustion of the vasomotor centres. Other centres, such as the cardiac and respiratory centres, are only affected secondarily in most cases.

In many cases of shock there is a marked toxic element present. As a general rule it may be stated that the degree of shock produced by an operation is dependent upon the amount of traumatism to the nerve elements of the part operated upon. Traction upon important nerves, or injury to them, will cause more shock than the same amount of interference with other tissues. The degree of shock caused by an operation is in direct proportion to the area of skin and muscle injured, and the relative number of nerve-endings in them: thus, crushing injuries of the foot and hand may cause more pronounced shock than amputation of the thigh higher up.

In operations upon the abdomen the degree of shock produced depends very much upon the area of peritoneum exposed, and the duration of the exposure. Generally speaking, operations upon the abdomen are more liable to cause shock than operations upon other parts of the body. Operations upon the upper portions of the abdomen, such as the stomach, duodenum, etc., cause relatively more shock than operations in the lower parts near the pelvis. The shock seems to depend upon the injury to, or exposure of, the peritoneum. Any form of manipulation of the peritoneum, such as traction upon it, sponging, flushing with hot water, and even exposure to air alone, causes a fall of blood-pressure, which, if the cause be continued, is progressive. The application of hot sponges to the peritoneum, or flushing the peritoneum with hot water, usually caused a sudden rise in the blood-pressure. In the later stages of the operation, however, it sometimes caused an equally sudden fall. Turning the intestines

out of the abdomen is in all cases followed by a sudden and often dangerous fall in the blood-pressure. Evisceration and extensive intra-abdominal manipulation, especially in the upper region of the abdomen, are always followed by a very marked fall in the blood-pressure. Much greater variations in blood-pressure occur during operations upon elderly patients than in young adults.

The effects of *anæsthesia* by ether and chloroform upon the blood-pressure vary. With ether anæsthesia, during the early stages there is a marked rise in blood-pressure, and investigations seem to show that during ether anæsthesia the blood-pressure tends to remain at its normal level, or to be slightly raised throughout the whole period of anæsthesia ; any fall in pressure which occurs during an operation being due to the steps in the operation, and not to the anæsthetic. With chloroform anæsthesia, the results are almost the exact opposite of those with ether. It has always been said by London surgeons that ether anæsthesia is safer in long operations, and those where shock is anticipated, than chloroform anæsthesia ; and this is proved by the records of blood-pressure during operations under chloroform. Chloroform anæsthesia is accompanied by a fall in blood-pressure during the whole period of anæsthesia.

Mummery thinks that the so-called gas-ether-chloroform sequence for long and dangerous operations is a mistake, as it results in chloroform being administered at just that period of the operation when the maintenance of the blood-pressure is all-important. In operations upon the stomach and other abdominal operations, where there are serious objections to ether anæsthesia on account of its liability to cause vomiting and to set up lung complications, the C. E. mixture is certainly the best substitute from the point of view of subsequent shock. Again, the longer the operation the greater the fall in blood-pressure, and hence *speed in operating* is still of great importance.

Deferred shock is frequently seen in children, and if a blood-pressure chart is kept, it is seen that at the end of an operation the blood-pressure is very low, and when the patient is in this condition the least thing may be sufficient to cause a dangerous or fatal fall in the blood-pressure. The pain and restlessness which so frequently accompany the post-operative period of returning consciousness probably act as the exciting cause of the ultimate break-down of the vasomotor system. Cushing has pointed out that under these conditions the pulse is best stimulated by small doses of **Morphine,** to stop the inflowing sensory impulses. From a study of 200 cases of death after operation, he comes to the conclusion that 21 per cent of them were either directly due to shock, or shock was an important contributory factor.

The application of heat has little influence upon the blood-pressure, and certainly does not tend to raise it, except in so far as recovery of the vasomotor centres will probably occur more readily if their blood-supply is at the normal rather than at a subnormal temperature. His experience is that strychnine has little effect in shock. In severe degrees of shock its injection, even directly into the veins, has little or

no effect. In lesser degrees of shock, it raised the blood-pressure; but it soon relapsed; in cases where it had no effect, **Saline Infusion** into the veins raised the blood-pressure. Alcohol also has no effect in shock, and really lowers blood-pressure. In the treatment of collapse, such as would result from a severe hæmorrhage, strychnine may be of value, because in such cases the vasomotor centres are not exhausted, and consequently strychnine will raise the pressure by stimulating these centres to increased activity. Saline intravenous infusion is, however, a better method of treating collapse. The raising of the foot of the bed (it should be raised at least a foot) is of the greatest value for combating shock, and all patients suffering from shock should

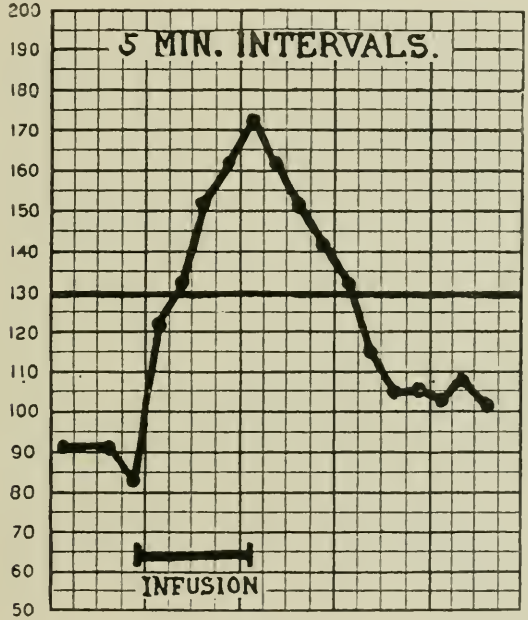

Fig. 61.

be nursed in this position until the blood-pressure has returned to normal. If a patient has been placed in this position it should not be altered suddenly (e.g., raising him to give him food) as the sudden alteration in blood-pressure may result in dangerous syncope. Pressure on the abdomen (as by a binder) will raise the blood-pressure.

TREATMENT.—**Saline Infusion** raises the blood-pressure and reduces the specific gravity of the blood, which becomes thicker during shock. In treating shock it is much better if the patient be infused early, instead of waiting to infuse until the patient exhibits dangerous symptoms, and it is much better to infuse moderate quantities of about a pint at a time, repeated at intervals as the patient's condition seems

to require it, than to infuse a large quantity at one time. If too large quantities are infused, the fluid simply escapes into the tissues and causes œdema. In collapse following hæmorrhage the rise in blood-pressure following saline infusion is maintained, and does not fall as in shock, after a short interval (*Fig.* 61). Introduction of saline infusion is useful in shock and septic conditions, for it not only raises the blood-pressure, as does intravenous infusion, but it also increases leucocytosis.

For raising the peripheral resistance of the circulation, we have **Suprarenal Extract** and its derivatives, and **Ergot.** Adrenalin can be used in a strength of 1 to 20,000, but it must be used intravenously and continuously. It is best to administer it so as to keep the blood-pressure at the normal level, by varying the amount injected (*Fig.* 62).

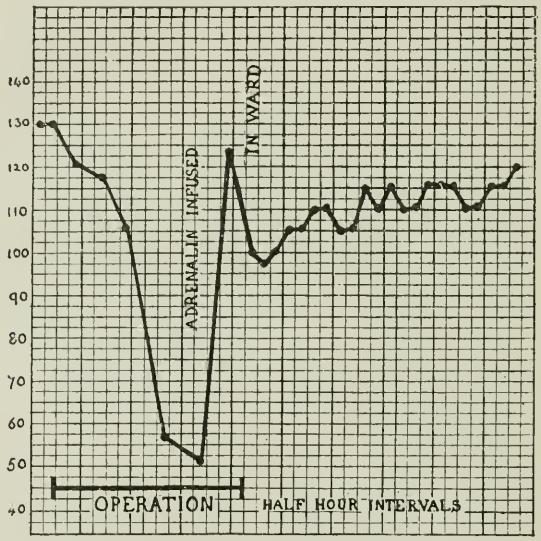

Fig. 62.

Ergot has been tried and with success, but the samples vary; some raising the blood-pressure and others having no effect. If given it must be given intravenously in dilute solution, with saline infusion if the shock is at all profound.

After all the *prevention* of shock is the most important matter; it is more easily prevented than treated. Means to raise the tone of the general health tend also to minimize shock. In all severe operations ether or the C.E. mixture should be given in place of chloroform. Then there are certain procedures which if possible should be avoided during an operation: evisceration of the abdomen; length of an operation; much loss of blood; interference with important nerve tracts (this can be overcome by cocaine nerve blocking); keeping the patient warm. All these are important in the prevention of shock.

The purgation and abstinence from food before operation also tend to lower the resistance to shock if carried too far, especially in children. Some form of nourishment should be given as soon as possible after operation ; subcutaneous feeding in certain cases might be of valuable service.

Methods of treating shock (saline infusion, bandaging the limbs, administration of ergot and adrenalin) are often not used at the time when they can be of the greatest service, viz., when the vasomotor centres are becoming exhausted, and before any real symptoms of shock have developed. In mangling of a limb, e.g., in a railway accident, injection of **Cocaine** into the nerve trunks, and amputation under general anæsthesia, is better than waiting for shock to pass off. In amputation at the hip or shoulder, **Cocaine Injection** into the brachial plexus or sciatic and anterior crural nerves has a great influence in preventing shock. Spinal cocainization itself produces shock. A hypodermic injection of **Morphia** given before the administration of a general anæsthetic, decreases the patient's susceptibility to shock during operation.

Gessner[2] injected one gram of **Cocaine** into the sciatic and internal saphenous nerves during amputation at the middle of the thigh, and noted that there was complete absence of shock.

J. Shelton Horsley[3] reports a case where nerve-blocking with cocaine, as recommended by Crile and Cushing, prevented shock in amputation at the hip joint in a weakly boy fourteen years of age. The operation was done according to Wyeth's method. Before applying the needles, or the tourniquet, the great sciatic nerve was exposed, and injected with several minims of a 4 per cent solution of cocaine, and the vicinity of the anterior crural nerve (its relation had been altered by the formation of sinuses) was infiltrated by a 2 per cent solution of cocaine. The blood-pressure did not vary 12 mm. during the operation, and there was very little shock.

P. Lockhart Mummery, F.R.C.S.

The condition called shock is the result of a break-down in the vascular hydraulic system, which controls and maintains the blood-pressure at a more or less constant level during health. The primary cause of the break-down is exhaustion of the great vasomotor centres, which normally completely control all the changes in the blood-pressure which take place, or tend to take place, as the result of outside influences. It is important to bear in mind the fact that exhaustion of the centres is the chief cause of shock, and that consequently any efforts at treatment which aim at stimulation of these centres are not only doomed to failure, but may materially increase the severity of the symptoms, and hasten a fatal issue. Strychnine and other stimulants are thus absolutely contra-indicated in all stages of true shock.

The best guide to the condition of shock present in any given case is the systolic blood-pressure, as recorded by repeated readings with

a sphygmo-manometer. This instrument is, however, not always available, and a simpler method of gauging the degree of shock and its progress is useful, even if not so reliable as a record of the blood pressure. Careful observations of the blood-pressure in cases of shock show, that when shock is present a fall in the blood-pressure is almost always accompanied by an *increase in the pulse rate*. [The reason for this will be found discussed in my Hunterian lectures.] This increase in the pulse rate is often very considerable, and may be taken as a rough guide to the degree of shock, especially in estimating the results of treatment.

Jonathan Wainwright[1] records a most interesting series of cases of shock, in which blood-pressure charts were kept; and the effects of different methods of treatment watched. After a careful study of numerous cases of severe traumatic shock, he comes to the conclusion that **Morphine** is the most valuable drug at our disposal in the treatment of this condition. Some of his charts show an immediate rise in pressure following its administration. **Intravenous Infusion**, either with or without the addition of adrenalin, was of the greatest value, the best and most lasting results being in those cases where it was used early. Detailed attention to the avoidance of exposure, the application of heat, ether as opposed to chloroform anæsthesia, and rapid operation, without unnecessary handling, were shown to be valuable methods of avoiding shock. He found the use of the sphygmo-manometer of the greatest value in the care of cases of severe traumatic shock, in informing the operator as to the true condition of the patient.

The hypodermic **Injection of Ergot** in the treatment of post-operative shock has received more attention in America than in this country. So far as it has been tried it has seemed to be of value, but further experimental and clinical evidence is needed. There are now several preparations of ergot upon the market, the blood-pressure-raising properties of which may be relied upon, and which can be used hypodermically.

The treatment of shock may be summed up as follows:—

1. Avoid the use of stimulants.

2. Raise the blood-pressure in the vital parts of the circulation by raising the foot of the bed, and by bandaging the abdomen and limbs.

3. Give hypodermic injections of morphia to cut off inflowing sensory stimuli to the centres.

4. Perform saline intravenous infusion as early as possible, and do not wait for serious symptoms to develop before doing so.

5. In serious cases intravenous infusion with adrenalin solution and injections of ergot should be tried. [N.B.—It is quite useless to inject adrenalin hypodermically.]

References.—[1]*Lancet*, March 18 and April 1, 1905; [2]*Amer. Med.* Sept. 24, 1904, see also Crile in *Jour. Amer. Med. Assoc.* June 17, 1905; [3]*New York Med. Jour.* Dec. 24, 1904; [4]*Med. News*, March 25. 1905.

SIALOLITHIASIS. *Priestley Leech, M.D., F.R.C.S.*

This is not of very frequent occurrence, but Roberg[1] reports a case and has collected 47 others since Futterer[2] collected 160 cases in 1896. Calculi in the salivary ducts and glands occur most often between the ages of twenty and forty years. A case has been reported in a child three weeks old. The presence of bacteria, inflammation in the duct or gland, and obstruction to the flow, have all been given as causes of lithiasis. Salivary calculi are more frequent in the submaxillary gland and duct than in the parotid, and are rare in the sublingual gland and duct. The symptoms vary according to the size of the calculus, its location, and the occurrence of suppuration. In the absence of suppuration, a calculus may exist for years without much disturbance. The most characteristic symptom of calculus in Wharton's duct, and usually the earliest, is the so-called "salivary colic" of the French, characterized by intermittent retention of saliva, and accompanied by more or less pain and discomfort. The retention of saliva, with the formation of a swelling in the floor of the mouth and in the submaxillary region, usually comes on when eating, and remains for one or several hours, disappearing gradually; or it may be made to disappear by pressing upon it, expressing the retained saliva into the mouth. The patient may be aware of a hard nodule in the mouth. With suppuration in the duct there is usually infection of the gland. A suppurative cellulitis of the neck may supervene, or a diffuse phlegmon; it may burst, leaving a fistula discharging pus and concretions.

Diagnosis.—This is usually easily made; alveolar abscess, syphilis, tuberculosis, actinomycosis, and malignant disease may all be suspected, A large percentage of cases are diagnosed as malignant disease.

Treatment.—Evacuate abscess, and remove the calculus. If in the duct, the calculus should be removed through the mouth. The removal of stones in Stenson's duct through the mouth may be impossible, and they may have to be removed from the outside. If the submaxillary or sublingual gland is thought to be the seat of the calculus, it must be reached from the outside; after exposure of the gland it is excised; if a single calculus is found and the gland not much changed, the calculus can be removed and the gland left. If the calculi are multiple and difficult to remove, or the gland is the seat of miliary abscesses, it is well to extirpate the gland. In case of calculus of the parotid gland, incision, removal of the calculus, and drainage are all that can be done.

References.—[1]*Ann. Surg.* May, 1904; [2]*Med. Detroit*, 1896, p. 550.

SKIN DISEASES (Tropical). *J. W. W. Stephens, M.D.*

Macleod[1] surveys the present state of our knowledge:—

(1) Skin diseases due to bacteria—*leprosy*. Rost's observations on the isolation of the leprosy bacillus have not been confirmed. (2) Those due to streptotricheæ—*Madura Foot*. Two main varieties occur, white or yellowish and black. The former is due to a streptothrix, but the

nature of the latter is doubtful. Oppenheim regards it to be an Oïdium. (3) Those due to blastomycetes—those who have examined many blood films in the tropics will be familiar with the contamination by yeasts. In America a form of skin disease known as "blastomycetic dermatitis" has been described. This yeast is pathogenic to animals, but the cause of the affection is disputable. (4) Those due to hyphomycetes—various forms of *Tinea imbricata*. Some consider the mould present in the scales to be a trichophyton, others an aspergillus. From pinta a variety of moulds have been isolated, viz., penicillium, aspergillus, morilia, and trichophyton.

Skin diseases due to animal parasites :—

(1) Craw-craw. This skin disease requires a more precise description than it at present possesses. Manson thought it was due to *F. perstans*. (2) *Pani-ghao*, ground itch or sore feet of Assam, a papulo-vesicular eruption. Probably due to the irritation caused by the larvæ of *Uncinaria duodenalis* as they penetrate the skin. (3) *Elephantiasis arabum*. The essential precursor of this condition is a lymph stasis, but how produced it is difficult to understand, as blockage of large lymph trunks does not produce stasis, much less the blocking of lymph glands by filarial embryos. Certain localized forms of elephantiasis, e.g., of the leg, occur in England, not so very uncommonly. These are supposed to be due to a streptococcus producing recurrent localized erysipelas, then lymphangitis and œdema, followed by fibrous changes and hypertrophy of the skin. The attacks of erysipelas lead also to thrombosis and endophlebitis, and hence lymph stasis. The author suggests that some such cause as a streptococcus also plays a part in tropical elephantiasis.

Diseases of uncertain origin :—

(1) Oriental sore, Biscra button, Aleppo button, Gaisa button, Bagdad sore, Nile button, are terms used for possibly identical lesions. The lesions begin as an itching papule, then a crust forms, and below this a shallow ulcer. As the ulcer increases the edge becomes red, raised and œdematous. They may persist for as much as a year. Microscopically the lesions resemble tuberculous granulomata. Streptococci, staphylococci, and more recently the "Leishman-Donovan" bodies have been found in these sores. (2) Veldt sore, giftzeer, brandzeer. These commence as one or more vesicles which give rise to an intractable ulcer, more superficial in nature than the Oriental sore. A staphylococcus has been thought to be the cause. (3) Phagedenic ulcer, Aden ulcer, Mozambique sore, Cochin China ulcer are names which probably do not connote the same affections. Jeanselme reserves the name for sloughing sores with a diphtheroid membrane. This affection commences as a sero-sanguineous vesicle, forming next a rapidly spreading ulcer. In severe cases the bone may be attacked. Dantec and Boinet have isolated non-motile straight bacilli. (4) Pemphigus contagiosus, described by Manson in South China, Straits Settlements, etc. It resembles pemphigus neonatorum. (5) Keloids, common in tropics, require investigation. (6) Yaws (see

page 456). (7) Verruga Peruana. Commencing as red vacuoles or vesicles, these develop into warty excrescences varying in size from a millet seed to an apple. Microscopically the tissue is extremely vascular granulomatous tissue, suggesting an angiosarcoma. (8) Ulcerating granuloma of the pudenda in British Guiana, Solomon Islands, West Africa, Fiji, etc. This commences as an ulcerating nodule and spreads slowly as a bright red mass of granulomatous tissue with a serpiginous margin. It is contagious. The cause is unknown. (9) Prickly heat, dysidrosis or cheiro-pompholyx, pellagra, acrodynia, ainhum, all fall into a class, as indeed many of the others, of unknown origin. Dhobie itch (see next page).

Malagasy ulcer.—Fontoyuont and Jourdan[2] recommend painting the ulcer with a 5 per cent solution of **Eosin,** and exposing it to the rays of the sun, covering up the surrounding skin.

Pinta.—Sandwith[3] gives a summary of the symptoms of the disease.

Diagnosis.—The white variety of pinta may be confused with *vitiligo.* In this, which probably is non-parasitic, the patches are symmetrical, with convex borders, and are surrounded by increased pigmentation. *Pityriasis versicolor* differs from *pinta* in that the patches on a dark skin are usually a silvery grey, and the scales can be removed by scratching, as the eruption is mainly superficial. The pinta eruption on the face sometimes resembles *lupus erythematosus,* and the scars of *favus,* with the latter of which pinta is often associated.

The fungus (*trichophyton pictor,* Blanchard) may be found in the scales: (1) Make an emulsion of the scales on a slide and dry; (2) Treat with ether; (3) Alcohol; (4) Dilute methylene blue; (5) Alcohol, xylol, balsam, or simply examine the scales fresh in caustic soda solution.

Treatment.—(1) **Tincture of Iodine,** or (2) **Ichthyol, Pix Liquida, Spiritus**—āā (Plehn). **Chrysarobin, Nitrate of Mercury, Sulphur,** may also be tried, but treatment is almost useless where the fungus has penetrated the *rete malpighi.*

Pityriasis versicolor in Ceylon.—Castellani[4] distinguishes two types of this skin affection, the black and the yellow. The black affected skin is darker than the surrounding skin. The affection does not occur on the face, but on any other part of the body, especially at the back of the neck. The fungus in this variety is abundant, the threads are about 20 μ by 2·5 μ. The spores are 5 to 7·5 μ, *Microsporon mansoni* (Castellani). In the yellow variety the skin is lighter (yellowish) than the surrounding parts.

Castellani subdivides this into two varieties: (1) Face, neck, and upper part of the trunk are chiefly affected. The patches are quite smooth and there is no desquamation or itching. The threads are short and thick, scanty in amount, and very irregular. The spores are 3μ to 3·5μ in diameter, not forming clusters, *M. tropicum* (Castellani): (2) The second yellow variety generally occurs on the arms and legs. They are light yellow or even white in colour. There may be slight elevation and very fine desquamation. The mycelium is thin and

regular, and often has straight spores 3 to 3·5 μ, sometimes forming large clusters. *M. macfadjeni* (Castellani).

Yaws.—Campbell Graham[5] records two cases in Europeans in Sumatra. Jeanselme[6] considers that yaws and syphilis are distinct diseases. The signs common to both are: (1) Pains in the bones and joints, worse at night; (2) The tendency of the eruption to become circular; (3) The preference for the neighbourhood of the orifices of the body; (4) The curative power of iodide of potassium and mercury.

The differences may be arranged as follows: S(yphilis), pandemic and acquired by heredity and by contagion; Y(aws), tropical and acquired only by contagion; S. has a primary pathognomonic lesion at the point of inoculation: Y. initial lesion, inconstant and does not differ from later appearances; S., immunity is almost certain; Y., reinfection is possible; S., auto-inoculation impossible; Y., possible; S., syphilitic chancres can occur on those suffering from yaws; Y., can attack a syphilitic person; S., eruptions multiform; Y., papillomata only; S., tertiary eruptions especially leave scars on the skin; Y., eruptions leave no scar unless irritated; S., three definite stages; Y., at all times the same; S., the mucosæ are attacked; Y., not attacked; S., internal organs affected Y., not affected; S., no itching; Y., much itching; S., hair falls out; Y., does not.

Treatment.—The native method is to use **Mercury Fumigations** after the first three months of the disease when no treatment is adopted. **Iodide of Potassium** in antisyphilitic doses is effective in a few months.

Castellani[7] records the finding of spirochætes indistinguishable from *Sp. pallida* (of syphilis) in the ulcers of yaws. They are 7 to 20 μ long.

"*Dhobie Itch.*"—Castellani[8] uses this term to designate a severe pruriginous intertrigo affecting the inner surface of the thighs, the axillæ, and the breast regions in women. It presents the signs of an "eczema marginatum." The fungus in it is probably a trichophyton, differing from that in tinea circinata. Dhobie itch and tinea circinata may occur on different parts of the same body.

Treatment.—Obstinate cases were cured by the application of **Oil of Turpentine,** followed by **Boracic Ointment** to allay the pain caused by the oil.

Pellagra.—Sambon[9] disbelieves that this disease is due to maize or damaged maize. The arguments against the causal correction of maize with the disease are: —

1. The areas of pellagra endemicity and maize culture do not correspond, and pellagra occurs among those who do not eat maize.

2. Pellagra only attacks the field labourer, not indiscriminately all those who live chiefly on maize. Towns are immune.

3. It is a disease of middle age (20 to 50 years); it does not principally attack children like ergotism.

4. It has a seasonal incidence. It attacks and has its relapses or recrudescences in early spring. The erythema reappears constantly every year among those affected, even when maize forms no part of the diet.

REFERENCES.—[1]*Brit. Med. Jour.* Nov. 11, 1905; [2]*La Presse Méd.* Jan. 1905, No. 4; [3]*Brit. Med. Jour.* p. 1271, 1905; [4]*Ibid.* p. 1271, 1905; [5]*Ibid.* p. 1275, 1905; [6]*Ibid*; [7]*Ibid*, and *Brit. Med. Jour.* Nov. 25, 1905; [8]*Ibid*, p. 1277, 1905; [9]*Ibid*, 1905, p. 1275.

SKIN GRAFTING. *Priestley Leech, M.D., F.R.C.S.*

Dr. Wilcox[1], of New York, employs the following routine for skin grafting in infected areas. The night before operation the ulcerating and surrounding area should be cleansed as thoroughly as possible with green soap and hydrogen peroxide, to remove the dry crust and débris from the granulations. In very foul ulcers more time should be taken, and a compress of 50 per cent solution of peroxide may be applied for a few days, until the exudate is removed. After cleansing, the raw surface is covered with a 1 per cent solution of formaldehyde (the ordinary 40 per cent solution being the unit), and this compress is allowed to remain in place until the patient is on the operating table. When the compress is removed it will be found that the granulation layer is dry and dark red in colour. This layer is friable, and should be scraped off with a sharp spoon from the underlying tissue, which is whitish, and bleeds very little. The removal of the granulation layer should be thorough, and what oozing there is can easily be stopped by the application of the Esmarch solid rubber band for a few minutes; the use of the rubber leaves an ideal surface for skin grafting. The rest of the operation is the ordinary one for the application of Thiersch's grafts.

Rushmore[2] has used the following method; render the granulating surface sterile; curette it thoroughly, and while it is still oozing place the grafts in any desired form in position on the surface and bathed in blood; apply the high-frequency discharge from a pointed electrode, at about one quarter of an inch distance over the entire surface till clotting is firm and the grafts are fixed on a dry surface. Serum that is squeezed out in the process of clotting should be sponged off. The dressing is 3 per cent carbolized vaselin and plain sterile gauze. It is renewed on the third day. Repair was hastened in some cases, in which the secondary Röntgen rays were used at the end of the first week.

REFERENCES.—[1]*Ann. Surg.* May, 1904; [2]*Ibid*, Sep. 1904.

SLEEPING SICKNESS. (*See* TRYPANOSOMIASIS.)

SMALL-POX. *E. W. Goodall, M.D.*

PATHOLOGY.—De Korté[2] has recently described certain bodies which he terms the "parasites" of small-pox, vaccinia, and varicella. These bodies, which are protozoa, are found in the fluid from the vesicles of these diseases. They are amœba-like, and contain a nucleus and a number of highly refractile bodies, which are supposed to be spores; at any rate they escape from the body of the amœba and move freely about alone. Apparently these amœbæ do not multiply by fission. De Korté gives directions as to the fixing and staining of these bodies.

In the same number of *The Lancet* as that in which de Korté's paper appears, is another entitled "Hæmoconia," by Andrew Love. He describes mobile bodies, similar to de Korté's so-called spores, as having been found by various observers in the blood of patients suffering from measles, scarlet fever, typhus fever, small-pox, and syphilis. Their nature and significance are at present unknown. Porter[2] states that he has found them in the blood of healthy persons. In 1892 Guarnieri described certain bodies found in the skin in small-pox and vaccinia. He called them cytoryctes variolæ and vacciniæ. Councilman, Calkins, Magrath, Brinckerhoff, and Tyzzer[3] undertook an investigation into these bodies. According to them they are really parasitic protozoa, which undergo certain developmental and reproductive changes in the skin. Ewing[4], however, brings forward evidence to show that these bodies are not parasites, but are due to degeneration of the protoplasm of the epithelial cells. It is very difficult to summarize these investigations satisfactorily, and the reader is referred to the original papers.

Diagnosis.—It has been commonly believed that if in a doubtful case of vesicular or pustular eruption, the patient is vaccinated (or revaccinated), the vaccination will not prove successful if the disease is small-pox; and that on the other hand a successful result entirely negatives small-pox. J. Coote Hibbert[5], however, with the view of testing this belief, vaccinated 20 patients after the appearance of the small-pox eruption. In 11 cases the vaccination was successful. Ten of these cases were vaccinated on one or other of the first four days of the small-pox eruption; the remaining case was vaccinated 14 days after the appearance of the eruption. In 7 of the 11 cases vaccination vesicles appeared, in the 4 others papules only. In 5 cases the vesicles were well marked. It is clear, therefore, that the performance of vaccination during an attack of small-pox, even in the eruptive stage, is useless as an aid to diagnosis. Frank Robinson[6] has also recorded similar results.

In a very interesting paper on recent small-pox in Leicester, Warner[7] gives accounts of the modified form of the disease in persons who have never been vaccinated. He draws attention to the fact that modified small-pox in the unvaccinated has not been sufficiently emphasized in modern text-books. As was known in pre-vaccination days, there are a few persons who are quite insusceptible to small-pox. Therefore, it is highly probable that modification even to the extent of the absence of the eruption (variola sinevariolis) may take place in the unvaccinated. [Sydenham described a fever, which he called febris variolosa, and believed to be small-pox without the eruption[8] E. W. G.] Of 643 cases of small-pox tabulated by Warner 339 occurred amongst unvaccinated persons, and in 14 of these (4·1 per cent) there were less than 100 pocks, 8 of them having less than 50. An account is given of some of these cases, from which it is clear that the disease was modified, even though the patients had not been vaccinated. Warner also gives notes of several cases of variola sinevariolis in

patients who had been vaccinated; but he did not meet with an instance of this form of the disease (excluding hæmorrhagic small-pox fatal before the eruption appears) in unvaccinated persons. As stated above, however, there is reason for supposing that such a case may occur.

References.—[1]*Lancet*, Dec. 24, 1904, and *Pract.* Jan. 1905; [2]*Lancet*, Jan. 7, 1905; [3]*Jour. Med. Res.* Feb. 1904; [4]*Ibid*, Nov. 1904; [5]*Lancet*, May 20, 1905; [6]*Ibid*, June 10, 1905; [7]*Pract.* Oct. 1904; [8]*Observ. Med.* iii. 3.

SMALL-POX (Conjunctivitis in). (*See* Eye, General Therapeutics of.)

SNAKE-BITE. *J. W. W. Stephens, M.D.*

Rogers[1] records successful treatment of cases of snake-bite by Russell's viper and by cobras, by means of incising the fang marks and rubbing in of **Permanganate of Potash Crystals.** He suggests the employment of this method for scorpion stings, dust laden wounds (liable to tetanus), bites of wild beasts, e.g., leopards, jackals, and bites of supposed rabid animals.

Reference.—*Brit. Med. Jour.* p. 1291, 1905.

SORE-THROAT (Pneumococcal). *E. W. Goodall, M.D.*

It has been recognized for some time past that diphtheria may be simulated by more than one form of acute faucial inflammation of bacterial origin. Last year we drew attention to one of these, the so-called "Vincent's Angina" (of which, by the way, a good account by Prof. Vincent himself has since been published[1]). Another is due to the pneumococcus, and a most interesting and typical case of this kind has recently been published by Pasteur[2]. The patient was a boy, aged 3½ years, in whom the illness commenced on October 24th, 1903, with sore-throat and great pain on swallowing, and high fever. Four days later, when admitted to hospital, he was found to have a temperature of 103° F., P 120., and R 40; the glands at the angle of the jaw were moderately enlarged. "A careful examination of the heart and lungs revealed no abnormal signs. . . . The uvula, soft palate, and faucial pillars on both sides were slightly œdematous, and intensely red and glazed. Both tonsils were somewhat swollen and intensely injected. There were no exudations of any kind, and no plugging of the follicles of the tonsils. The posterior wall of the pharynx could not be seen." The breath was very offensive. There was no albuminuria. The case was at first thought to be diphtheria, and was treated with antitoxin. But no benefit resulted; and bacteriological examinations of the fauces revealed micrococci only and no bacilli. The temperature remained high. On November 7th the spleen was enlarged; Widal's reaction was negative. The fauces remained acutely inflamed; the lungs were still clear. By November 11th the uvula and adjacent portions of the soft palate had commenced to slough; the patient then showed signs of cerebral irritation. During the next few days the sloughing increased. On November 14th signs of broncho-pneumonia appeared in the left lung. The patient died on November 15th, the twenty-second day of illness. The post-

mortem examination showed extensive sloughing and inflammation of the soft palate and tonsils; there was a little pus in the right pleural cavity, and extensive gangrenous broncho-pneumonia of the left lung. Cultures obtained postmortem from the pharynx and lungs yielded the diplococcus pneumoniæ in predominating numbers.

This form of faucial inflammation is difficult, if not impossible, to distinguish clinically from that due to streptococci. Though at first simulating diphtheria, the persistence of pyrexia, the cerebral symptoms, and the local sloughing, soon serve to make the diagnosis fairly easy. The condition, however, is very like what is met with in scarlatina anginosa; and it must be remembered that in this form of scarlet fever the rash may be wanting. But there is usually peeling, with rapid and at times extreme wasting; and a nasal or aural discharge frequently occurs. Erysipelas of the fauces has also to be thought of in such cases; but usually in erysipelas the œdema is very extreme. Though in the case just related no definite exudation was seen, yet membranous inflammation may be set up by the pneumococcus. The diagnosis rests finally on the results of bacteriological examinations.

References.—[1]*Lancet*, May 13, 1905; [2]*Ibid*, May 27, 1905.

SPERMATIC CORD (Torsion of). *Priestley Leech, M.D., F.R.C.S.*

Dowden[1] gives an account of five cases of recurring torsion of the spermatic cord. Perry[2] describes two varieties of torsion, one characterized by one sudden and acute attack; the other variety by more or less frequent recurrence, with or without the eventual onset of an acute degree of torsion. The main predisposing factor is the abnormal manner in which the testicle suspended by the cord hangs free in the tunica vaginalis. Lauenstein has also laid stress on a broad and flattened cord as another predisposing cause. There is also an abnormality in the disposition of the vas deferens and the vessels. The chief vascular structures pass between the visceral layers of the tunica vaginalis to the globus major, occupying one border of the mesorchium, while in the other the vas deferens ascends from the globus minor. There is no satisfactory term for this, "bifidité du cordon," or "bifurcation" expresses the condition badly, and Dowden suggests the expression "intermesorchial separation of the cord" as being more suitable.

The testicle may be situated anywhere in the line of descent, but acute torsion affects imperfectly descended testes more frequently than descended ones. The exciting cause is difficult to find; some movement, e.g., crossing the legs; distension of hypertrophied varicocele; irregular action of the cremaster or gubernaculum, have all been cited as causes.

Patients suffering from this condition apply for advice during a severer attack than usual, or because they have just passed through one, or, annoyed by attacks, they wish to avoid the recurrence of them. The symptoms are sudden onset of pain in the testicle, sickening in character, spreading over the hypogastric and up to the lumbar region.

Vomiting usually occurs early, and with it more or less signs of collapse, shown by pallor and perspiration on the forehead and lips. The testicle is extremely tender on handling, and in the course of a few hours swelling occurs. Prostration is complete until relief, which comes as a rule in a few hours and suddenly. Patients have attributed relief to hot fomentations and stroking the testicle. These attacks, varying much in severity, may come on at intervals of weeks, or more usually months. Locally the testicle is swollen and tender, and should some hours have elapsed fluid is generally present in the tunica vaginalis: the epididymis is enlarged, and on tracing the cord upwards a hard, very tender area may be felt: this is the site of the torsion. Sometimes there is a rise in temperature; 100° F. and 102·2° F. have been recorded. As regards diagnosis, the condition for which it is most likely to be mistaken is epididymo-orchitis. After swelling has occurred, strangulated hernia may be suspected. Appendicitis in an inguinal hernia and embolism of the spermatic artery may have similar symptoms.

TREATMENT.—If seen during an attack untwisting the cord should be attempted. **Fixation of the Testicle** should be done to prevent recurrence of the attacks. An oblique incision may be made across the cord just below the external abdominal ring, and through this the tunica vaginalis is exposed and separated from the coverings either before or after opening; the parietal layer of the tunica vaginalis is clipped away, and the visceral layer over the testicle and the cord scraped: the testicle is now fixed to the coverings by one or more catgut stitches passed through the tunica albuginea, being careful to anchor it well down and avoid torsion. Dowden gives notes on five cases.

REFERENCES.—[1]*Brit. Med. Jour.* April 29, 1905; *Birm. Med. Rev.* vol. xliii. May 1898, p. 270.

SPINAL ANÆSTHESIA. *Priestley Leech, M.D., F.R.C.S.*

T. Tuffier[1] recommends **Stovaine** as a substitute for cocaine in spinal anæsthesia. Five cgrams of the drug in 10 per cent aqueous solution are generally injected into the dural sac in the usual way. The anæsthesia appears somewhat sooner (in four or five minutes) than with cocaine, and usually lasts three-quarters of an hour.

Deloup[2] uses a plain 4 per cent solution of **Cocaine** made with sterile water and heated to the boiling point at the time of the operation. After an experience in 100 cases he comes to the following conclusions: The method is as safe, if not safer, than general anæsthesia; half a grain of cocaine can be used without danger: shock when present is decidedly less than in general anæsthesia; it is attended with less danger of annoying sequelæ and symptoms, and it can be relied upon for prolonged operative procedures.

Robert Jones[3] records two cases, one in a man of thirty for badly-united fracture of the tibia and fibula, and another in a man sixty years old, with cavities in the lung, in which a large abscess was opened

and the head of the hip bone excised ; in the latter case the patient had nearly died in an attempt to give him chloroform. He thinks that, with care, the risks are not very great. It will be of use in patients who cannot take an anæsthetic, as in those suffering from advanced phthisis and from respiratory affections ; in people who have a fixed aversion to taking an anæsthetic and in whom an operation is urgently needed ; and in those suffering from great shock due to severe injuries of the lower limbs.

References.—[1]*Wien. klin. Woch.* Ap. 9, 1905 ; [2]*New Orleans Med. Surg. Jour.* ; [3]*Med. Press.* Nov. 30, 1904.

SPLEEN. *A. W. Mayo Robson, D.Sc., F.R.C.S.*

Primary Sarcoma of the Spleen.—Jepson and Albert[1] report a case of primary sarcoma of the spleen in which splenectomy was successfully performed. The patient was a girl aged 15, who came under surgical notice for a slowly-increasing swelling in the left hypochondriac region, which caused no particular discomfort beyond a slight dragging sensation after walking. They have collected 32 cases of sarcoma of the spleen, including the one here reported, of which 12 were subjected to operative treatment: 11 to splenectomy, and 1 to enucleation of the growth. Of the 11 cases of splenectomy 3 were fatal, and of the remaining 8 patients 3 have died from recurrence. An analysis of the symptomatology of primary sarcoma of the spleen has led them to the conclusion that the diagnosis of this affection must, for the present at least, be largely based upon the recognition of the existence of a solid growth of the spleen, and that a definite diagnosis cannot be made until the spleen is exposed by an exploratory laparotomy, which, it is held, would always be indicated when doubt exists. As to treatment, no question can exist as to the advisability, in the absence of secondary involvement of other organs, of removing the spleen, which operation in the hands of experienced surgeons must be associated with but a low mortality. The results of experience hitherto acquired justify the hope that a very large percentage of cases of primary sarcoma of the spleen will be found susceptible of a radical cure.

Reference.—[1]*Ann. Surg.* July, 1904.

SPLENO-MEGALY (Tropical). (*See* Kala-Azar.)

SPRUE. *J. W. W. Stephens, M.D.*

Cantlie[1] discusses the symptoms and treatment of sprue. Sprue is characterized by : (1) A bare and usually painful tongue ; (2) Frequent attacks of stomatitis, with ulceration in buccal cavity ; (3) Frequent soft, bulky, fermenting, pale stools ; (4) Anæmia and loss of strength. The liver may atrophy, so that it is difficult to detect either by palpation or percussion. Post mortem the intestinal walls may be as thin as tissue paper, and the mucosa and submucosa may easily be rubbed off.

Treatment.—This is as follows :—

1. The patient is put to bed, and a hot wet-pack is applied reaching

from nipples to groin, and extending round the latter. This is kept on by means of a large bath-towel for two hours. It is applied night and morning. Cantlie advocates the "**Meat Treatment.**"

2. For breakfast, lunch, and dinner, 5 ounces of pounded beef, lightly cooked, are given.

3. Home made beef-tea, beef-jelly, calves-foot jelly, or a plain jelly is given every two hours.

4. **Castor Oil,** 1½ drachms every morning for the first three days.

5. **Santonin,** 3 grs. morning and evening for three days.

The stools under this treatment become solid and bile-stained. The diet may now be increased. Poached egg, pounded chicken may be added, next thrice minced chicken, and in about a week some undercut of beef. Stewed celery, seakale, marrow, pulled bread, and thin slices of bread baked in the oven for twenty minutes, etc., may now be added.

Strawberries may be given with the meat treatment, 3 to 4 lbs. during the day between meals.

Manson[2] states that the characteristic change in sprue is almost total atrophy or erosion of the mucous membrane from the mouth to the anus. Secondary shrinkage of other organs, such as the liver, may ensue. He describes the **Milk Treatment:** (1) Milk to be administered slowly by teaspoon or through a straw, not more than three pints a day; (2) The quantity to be slowly increased up to 6 pints, and this treatment continued for six weeks; (3) Strawberries have a remarkable effect.

Hartigan[3] advocates **Cyllin,** a new germicide. Palatinoids containing 3 minims are administered after food. They may be given every 2 hours, and generally not more than 8 are required. The drug should be continued for a month after all symptoms disappear.

References.—[1]*Brit. Med. Jour.* p. 1281, 1905; [2]*Ibid,* April 22, 1905; [3]*Jour. Trop. Med.* Mar. 1, 1905.

STOMACH (Disorders of). *Boardman Reed, M.D., Philadelphia.*
Walther E. Rahte, M.D., Philadelphia.

Physicians the world over are showing increased interest in the recent more exact methods of diagnosis in digestive derangements, as well as in the improved methods of treatment founded on them. Yet some are still content with the diagnosis of dyspepsia which means little or nothing. It is merely another name for pain or discomfort of some kind from an unknown cause, referred to some part of the gastro-intestinal tract. It is admittedly only a symptom which is likely to result at times, if not regularly during each digestive period, from any of the possible diseases or derangements of the stomach, liver, pancreas, or intestines. It can result, besides, from a variety of affections in other parts of the body, such as the kidneys, brain and nervous system generally, the gastric or intestinal discomfort being their reflex or a secondary disturbance of the digestive functions. It may be a symptom thus of any one of a long list of disorders, just as cough is an obtrusive symptom of many different respiratory affec-

tions, from phthisis to pertussis and measles. No one would now consider it justifiable to write of bronchitis, pneumonia, etc., under the head of "Coughs," and why should we still discuss the manifold diseases of the digestive organs under the title of "Dyspepsia"?

Digestion in the Insane.—Cowie and Inch[1] report 22 cases which were under treatment in an asylum. Of these 18 showed an excess of hydrochloric acid.

The authors' results were confirmatory of those obtained by von Noorden, 71·4 per cent of whose 14 insane cases showed hyperacidity.

Acid Dyspepsia.—In a recent clinical lecture Robert Hutchison[2] talked lucidly of the forms of indigestion dependent upon excessive secretion of HCl.

Riegel[3], shortly before his death, published a paper in which he pointed out clearly the distinction between hyperacidity—better hyperchlorhydria—the usual mild or moderate acid dyspepsia, and continuous hypersecretion. In the former there is an excessive secretion of hydrochloric acid during the period of digestion only, while in the latter the excessive acid secretion is continuous day and night, so that in the morning before breakfast large quantities of a highly acid fluid, almost pure gastric juice, are often vomited. The diagnosis cannot be made without testing the stomach contents before food is taken in the morning. Riegel insists that any stomach which secretes a fluid having digestive properties when it has not been stimulated by food is a diseased one. He shows that Pawlow has furnished the answer to the question, Why does the excessive acid juice not pass on out of the stomach? by his demonstrations that in such cases the contact of the hyperacid fluid with the mucous membrane of the duodenum provokes immediately a spasm of the pylorus which prevents its egress, causing retention with over-distention of the stomach, pain, vomiting, constipation, and finally, gastric dilatation, if the condition be not remedied.

Reinhard[4] considers such a case at length on account of the comparative rarity of this form of hyperacidity, Bittdorf in a study of the subject having been able to find in the literature reports of 12 cases only in addition to one observed by himself, though many more have been reported. Reinhard's case had the usual symptoms just mentioned, and also a feeling of weight or oppression, waterbrash, nausea and loss of appetite. Generally the appetite is increased in cases of excessive acid secretion. The stomach was completely emptied at bedtime, and yet next morning 315 cc. of a clear transparent fluid, which proved to be pure gastric juice, were taken up. Gastric ulcer and gastric dilatation could be excluded; therefore the diagnosis of uncomplicated continuous hypersecretion, or Reichmann's disease, often called also gastro-succorrhea, was made.

Bosquier[5] has lately described what he considers a mild form of hypersecretion secondary to an incomplete pyloric stenosis dependent upon an ulcer in the duodenum. The treatment he advises in such cases is directed against the ulcer, to wit, **Stringent Diet,** prolonged **Alkaline**

Medication, and having a surgeon always in readiness to perform, if necessary, a gastro-enterostomy—not pylorectomy.

Hayem[6] has reported cases of the same kind, and his views as to their etiology and pathology seem to accord in the main with those of Bosquier.

Intermittent Gastric Hypersecretion or Gastroxynsis.—This is an exceptional form of hyperacidity which is often unrecognized. Gilfillan[7] reports that he has known several such cases to be operated on for gallstones on account of the recurrent attacks of severe spasmodic pain in the upper abdomen. He describes at length the symptoms, which are like those of Reichmann's disease, except that the pain, vomiting, etc., which are often violent, occur in paroxysmal attacks lasting one or more days and then subside, the gastric secretion in the intervals being either normal or more commonly somewhat excessive during digestion only. These attacks may recur every week or so, or only at much longer intervals.

TREATMENT.—Gilfillan advises first of all treatment of the neurasthenia which, he believes, always underlies the trouble, and secondly for the attacks washing out the stomach with an alkaline solution; or, if the tube cannot be used, the administration of alkalies in large doses. He does not mention the kind of diet advisable, but no food should be given during an attack, unless **Olive Oil** can be retained; and during the intervals the diet should be that appropriate to the general and local condition, including much fatty food, as well as alkalies, when there is hyperchlorhydria.

In the discussion of Gilfillan's paper by the Minnesota (U.S.) Academy of Medicine, a leading speaker erroneously recommended abdominal massage as the only very valuable remedy, while the fact is that any kneading of the epigastric region tends usually to aggravate all the forms of excessive hydrochloric acidity, as shown by Boardman Reed[8] and others.

Numerous papers on simple *hyperchlorhydria* have appeared during the past year, but most of them contain no new thought and add nothing of value to our knowledge of the subject. Arneill[9] emphasizes the fact that one test is by no means sufficient to establish the diagnosis, since different foods and kinds of meals excite the gastric secretion to a very different degree. He advises testing first after an Ewald breakfast of bread and water, next after the patient's usual lunch, and again after a Riegel test dinner. In this way the real secretory work of the stomach can be accurately ascertained. He reports a series of numerous observations on ten different melancholic patients, which show marked variations between the different analyses in each case, and yet the average results showed in the majority a marked tendency in one direction—toward hydrochloric acid excess. In one of these the free HCl varied from 0 to 90, and the total acidity from 10 to 108!

Arneill points out further that in hyperchlorhydria the symptoms are not diagnostic and, in fact, may be very misleading. There may

be slight inconvenience only or even no complaints in marked cases and intolerable pain, vomiting, etc., when the HCl excess is very small, the latter cases usually being complicated with gastric neurasthenia and hyperæsthesia. He agrees with von Valzch and Nisbet that normally one hour after an Ewald breakfast the free HCl should be about 10, the total acidity 55, and the combined HCl 45. The *treatment* advised by Arneill is comprised in the usual methods of combating the accompanying neurasthenia by rest, fresh air, electricity, hydrotherapy, and massage. He does not mention that massage of the abdomen is to be avoided. Among drugs he recommends **Alkalies** after meals with **Bismuth** and **Cerium Oxalate** before meals, and as a nerve tonic agrees with Musser[10] in praising enormous doses of **Nux Vomica**, increasing gradually from 10 to 70 or 80 drops of the tincture three times a day. He is not decided as to the proper diet, the authorities differing widely as to this, but gives the preference to a mixed diet, with the proteids predominating.

Kumoji[11] has confirmed experimentally Pawlow's results as to the powerfully stimulating influence on gastric secretion of the meat extractions. Hence the harmfulness of strong broths, etc., in hyperchlorhydria.

Glycogen has been highly recommended as a remedy for hyperchlorhydria and the resultant emaciation by Meunier[12]. Finding the loss of flesh to diminish proportionately with the decrease of sugar in the chyme he began experimenting with the administration of various sugars. Glycogen was found to give the best results. In some cases in which emaciation continued in spite of 4 litres of milk a day, the weight began to increase as soon as glycogen was added to the identical diet. This substance, besides exerting a favourable influence on nutrition, is said to be valuable also as an anti-ferment in cases of hyperacidity with stasis. It is claimed for it further that it seems to stimulate directly the secretion of pepsin. Other physicians are said to have tested this remedy, and some thirty patients have been treated by it with favourable results.

Saccharin on the other hand, a substitute for sugar, which has attained to so wide a popularity, especially in America, as to be prescribed for themselves by many dyspeptics who do not tolerate sugar, has been found to exert a depressing effect on several of the digestive secretions according to a number of investigators. Mathews and McGuigan[13] report the results of a series of experiments which apparently demonstrate that saccharin in the usual doses, besides other injurious effects, such as lessening the oxidation of sugar in the blood, diminishes decidedly the activity not only of the gastric juice, but also and still more that of the saliva and pancreatic juice. So that, according to these findings, *saccharin* might prove efficient as a remedy for hyperchlorhydria, but other remedies are probably safer and better.

Eccles[14], however, in a later communication denies emphatically the accuracy of the methods and results of Mathews and McGuigan, and

claims that numerous abler experimenters have reached contrary results. Clinicians should wait for further and more decisive experiments.

Chloride of Sodium has generally been considered a direct and decided stimulant to the gastric glands, and especially as an excitant of the HCl secretion. The saline waters of Homburg, Kissengen, etc., have long been successfully employed in cases of atonic dyspepsia with deficient secretion, though von Noorden[15] has recently contended that in connection with a diet very rich in cream they are capable of assisting also in the cure of hyperchlorhydria.

Experiments on dogs with gastric fistulas according to Pawlow's method have been made by Bönninger[16] to determine in this manner the effect of table salt on the secretion of the gastric juice. They showed a strong diminution of the total amount of such secretion—a diminution greater even than that produced by sugar. The proportion in it of HCl, however, was increased, thus confirming, in part at least, the general clinical experience. Doubtless, however, as in the case of all stimulants, very large doses, or moderate ones continued for a long time, would result in a decrease of the acid as well as the other ingredients of the gastric juice.

Reduction of Salt in the Diet has been tried as a remedy for hyperchlorhydria by Laufer[17] with the result of confirming from the clinical side the prevalent opinion that this substance is, in the amounts usually taken at table, a stimulant to the hydrochloric secretion. In the cases of several persons suffering from obstinate hyperchlorhydria and not benefited even by an exclusive milk diet, Laufer effected rapid amelioration, and finally cures, by placing them on a diet containing very much less than the customary amount of salt. The ration allowed by him was as follows: milk, 1 litre; potatoes, 300 grammes; two eggs; meat, 300 grammes; farina, 200 grammes; sugar, 50 grammes; and butter, 40 grammes. No bread at all. It is to be inferred that the meat was cooked without salt, and that the butter was the saltless kind commonly served in many parts of the Continent.

A very practical bearing on the question of managing the numerous forms of dyspepsia dependent on aberrations from the normal in the secretion of hydrochloric acid, may be claimed for some recent experiments with the bitter tonics. Clinicians generally have been convinced from their experience that many of the vegetable bitters given in small or moderate doses before meals increased the activity of the gastric juice, improving thus both the appetite and digestion: but a number of experiments carried out some time ago, showed apparently an opposite effect, for one reason, doubtless, because (as is said) the investigators neglected to give food after the administration of the bitter drugs, but probably also because of the doses of these having been excessively large, so that over-stimulation resulted. In line with this explanation of the former findings are the quite recent reports of Musser and others (already mentioned) that they have found enormous doses of nux vomica effective in curing hyperchlorhydria.

Nano and Mironesco[18] of Bucharest, in a series of experiments with the bitters, employing chiefly tincture of cinchona, demonstrated that these produce a stimulating effect on gastric secretion, notably the secretion of hydrochloric acid, when the administration of them preceded the giving of food. But the fact that small or moderate doses of many bitters, stimulate the gastric glands, makes them unsuitable in the treatment of hyperchlorhydria, with the possible exception of nux vomica, which one of the reviewers (Reed) has observed to be better tolerated in such cases, even in moderate doses, than the other bitter tonics.

Bickel[19] has investigated the effect of **Alkalies** and **Acids** upon the secretory function of the stomach in dogs having Pawlow fistulas. He confirms Pawlow's observation that alkalies (bicarbonate of soda being the one given) lower the secretion. Even when the latter had been strongly increased by *pilocarpin*, it was completely stopped by the *soda*. Putting into the stomach dilute *hydrochloric acid* produced no effect by itself upon the secretion of the gastric juice in a dog suffering from chronic gastritis, but, on the other hand, the amount of juice secreted at the next succeeding feeding with milk was greater than when no HCl was given, and the juice in the former instances contained free hydrochloric acid, whereas it otherwise did not show any acid reaction. These experiments also are confirmatory of the experience of the more observant clinicians, especially those who study their cases with the help of analyses of the stomach contents.

A notable exception to the foregoing is Chase[20] who administered to each of two patients suffering from atrophic gastritis 40 to 45 drops of HCl (probably the dilute acid) within a short time after each meal for considerable periods with the result that there was a small decrease in the average amount of HCl secreted afterward; and gave a moderate dose—8 drops—to a third patient with no resulting change in the hydrochloric secretion. He does not describe the condition of this patient further than to state that the HCl was always absent, and the total acidity always very low. This was then probably a case of atrophy of the glands which no remedy helps. In his Cases I and II the doses were much larger than have usually been found stimulating.

Chase[21] has experimented with ten of the most advertised digestive preparations, viz., **Pepsin** in various forms, including combinations of it with **Pancreatin** and the alleged products of other digestive glands, as well as preparations of the papaya plant. None of these showed the power of digesting egg albumen or fibrin in test tubes without the addition of HCl, or of a portion of gastric juice containing free HCl. Combined with chyme from a case of chronic gastritis containing no free HCl, all failed to digest. No tests were made by adding pepsin to portions of an over-acid chyme taken from a hyperchlorhydric case, though it is well known that in such cases peptonization is often poor, and it is in such cases particularly that pepsin has proved useful clinically in the hands of various observers.

Chase also cites numerous writers, some of whom condemn entirely the use of pepsin, and others consider it to be rarely of value. Papain he found would digest proteids in an acid menstruum, but not at all in an alkaline one, thus disproving the claims of numerous manufacturers of preparations made from the papaya plant. From his experiments he draws the conclusion that no good practicable results are to be expected from the administration of pepsin in any kind of cases, and has nothing to say in favour of the other enzymes.

Bettmann[22] in a very full presentation of the subject gives some weight to the very large amount of clinical and experimental evidence in favour of pepsin in certain combinations and conditions, especially in the form of the fresh gastric juice obtained from the stomachs of dogs and pigs. He seems inclined to concede that the latter have been shown to exert more highly curative effects in atonic dyspepsia than have been obtained from HCl alone, and holds that pepsin should be tried in acute indigestion as well as in all cases in which the quantity of its secretion is below the normal; also in achylia gastrica, atrophic gastritis, and as a palliative in carcinoma. He declares the trade preparations to be mostly useless, since in some of them the pepsin is inactive and in others combined with incompatibles. He disputes the statements of Fairchild and Chase that pepsin rapidly deteriorates when combined in a solution with HCl, having proved by experiment the contrary. He considers conditions calling for the administration of diastatic ferments to be exceptional, since the pancreas rarely fails to make up for any failure of the saliva, and is doubtful as to any advantage to be derived from the pancreatic extracts.

Sharp[23] holds that ripe fruit, beside its laxative and other virtues, contains in various degrees a digestive ferment for proteids similar to pepsin though feebler. The digestive action of pineapple is well known. Coagulated egg albumen placed between layers of ripe strawberries, pears, cherries, or sliced oranges, or to a less extent, apples, will, according to Sharp, be slowly digested when kept at summer heat. There are thus good reasons for eating fruit at the end of a hearty meal. Cooking the fruit destroys this digestive power.

Intragastric Electricity in Dyspeptic Conditions.—Borri[24] has carried out a series of experiments partly on healthy, and partly on ailing persons, to determine the effects of both faradic and galvanic currents applied directly within the stomach. As regards the secretion he noted an increase in a number of cases, though the high-tension faradic current which Boardman Reed has found most frequently to lessen the proportion of HCl does not seem to have been employed. The pepsin secretion was not only not increased as a result of Borri's experiments, but was diminished. He could not recognize any influence of either the faradic or galvanic current upon the motility, but the tonic effect of the former develops gradually.

Dilatation of the Stomach and Pyloric Stenosis.—Obstruction of the pylorus is the most frequent cause of dilatation. The obstruction

may be dependent upon any one of the many possible mechanical causes or upon a spasmodic contraction of the pyloric sphincter, which in its turn has been provoked by a severe or persistent hyperchlorhydria. Even when the scar of an ulcer in or near the pylorus has produced the obstruction, excessive acidity of the chyme is again usually either an etiologic or associated condition. Much less frequently there is a true atony of the stomach walls which, when long continued, leads to dilatation. Einhorn[25] reports that among 3,243 patients there were 47 cases of what he calls "ischochymia," or clinical dilatation of the stomach. Of these 23 were from benign and 21 from malignant causes. In 3 cases the cause was undetermined.

Acute Dilatation of the Stomach and Intestines.—The important but much neglected subject of acute dilatation of the stomach and intestines is discussed by Thomson[26] in an article in which he presents many convincing arguments in favour of the paralytic nature of these conditions. He believes that the nervous mechanism presiding over the muscular movement and glandular secretion of the alimentary canal sometimes breaks down and gives rise to paralytic symptoms, including excessive secretion. The two chief factors concerned in this disturbance of the nervous mechanism are the circulation of poisons and interference with the nervous structures of the abdomen. Of a series of 44 fatal cases of acute dilatation of the stomach, 12 were associated with abdominal section. In the severe cases acute dilatation of the stomach is one of the most dangerous diseases of the digestive tract, and it is important from a prognostic and therapeutic point of view to ascertain with what organic disease, if any, it is associated. Thus, in some cases, paralytic distension of the stomach and intestines, which is one of the consequences of inflammation of the peritoneum, may be so severe as to cause the peritonitis to be overlooked, and in consequence a more hopeful prognosis may be given than is justified, and some form of surgical interference may be omitted which might have been of benefit to the peritonitis. Acute dilatation of the stomach and the same condition in the intestines frequently coexist, although naturally the symptoms of one are likely to predominate over the other. The dilatation is usually primarily paralytic in origin, but later the stomach or intestines may be easily rotated or changed in position, and thus bring in the influence of obstruction as a secondary cause. Paralytic distension of the intestine is found associated with peritonitis, typhoid fever, infantile diarrhœa, cirrhosis of the liver, pneumonia, after abdominal operations of all kinds, and occasionally after operations upon distal parts of the body.

In dealing with paralysis of the intestines, two features specially to be considered are (1) loss of power of the muscular walls, and (2) the presence of gas or fluid which will, if combined with weakness of the walls, give rise to various degrees of distension.

The treatment consists in the passage of a tube into the stomach or rectum as required, together with carminatives and suitable enemata. If, however, these simple procedures fail it may be necessary to relieve

the distension by performance of a laparotomy, and an incision or a puncture into the paralyzed bowel. In paralytic cases where diarrhœa is the prominent factor, the main point is to keep up the strength of the patient and especially to supply the tissues with plenty of water which, if necessary, must be given by transfusion. The diarrhœa should not be checked in too routine a manner, for the offensive material is much better excreted than retained in the intestine, as it is apt to be if peristalsis is checked too freely.

Acute dilatation of the stomach can be best dealt with by the passage of a soft tube, for the stomach is often too weak to accomplish its task of getting rid of the fluid without aid. Relief is also often further obtained by placing the patient in the prone position, or even the knee-elbow position if he is not too ill. Surgical treatment so far has not met with much success. Cases in which the stomach has been opened and drained have not done well.

Kemp[27] points out that acute dilatation besides being frequently a sequel of operation, especially abdominal section, may result also from acute inflammation of the mucosa of the stomach, from typhoid fever, from pneumonia, or other pulmonary disease. It may occur also during attacks of migraine, as well as just preceding epileptic seizures, and even from indiscretions in diet.

Acute dilatation of the stomach has been made the subject of an elaborate paper also by Appel[28] in which three cases observed by him are reported, and the literature well studied. From the latter he has gleaned reports of 63 cases with 50 deaths. As to *treatment of acute dilatation*, Appel advises absolute rest of the stomach—no food, drink, or medicine—relief of the distention with the stomach tube, rectal feeding and hypodermics of strychnine and physostigmine for their stimulating effect on the nerves and unstriped muscular fibre; but when the paralysis is complete, death is certain.

Symptoms and Diagnosis.—The symptoms and diagnosis of chronic dilatation of the stomach are referred to by Kemp and Einhorn in the papers by them already cited. The symptoms alone are rarely decisive, except in the severe typical cases in which there is regularly recurrent vomiting of offensive stomach contents in large quantities: and the indispensable first step in the diagnosis is mapping out the stomach. Most experts find palpation, percussion and succussion sufficient for this in nearly all cases, but certain instruments of precision may help. Benedict[29] relies on these methods usually, employing especially auscultatory percussion with a bi-manual stethoscope, and has verified his results often by means of the X-ray. Occasionally he finds the tuning-fork or an electric buzzer with a rubber stem a very delicate substitute for the percussing finger.

Knapp[30] has brought forward a novel method of outlining the position of the stomach—one which should prove particularly useful to those not skilled in percussion and palpation, and of confirmatory value to all examiners in doubtful cases, especially when the abdominal walls are thin. He has the patient drink a glass of cold water—

presumably when his stomach is entirely or nearly empty—and then half a minute later, passes his hand, which must be warm, over the bare abdomen. A cold area can thus be felt corresponding to the position of the stomach. This is certainly simple, and while not an exact method, should furnish quickly approximately accurate information, except in obese patients.

Cohnheim[31] reports 16 cases in which he was able to palpate the pylorus, and in a part of them could auscultate the passage of the chyme through it. A chief distinguishing point, between a tumour and a palpable pylorus, according to him, is that the latter alternately swells up and then disappears, while an ordinary morbid growth remains the same. In thin persons with a stomach lower than normal and a separation of the recti muscles, the contractions of the pylorus may even be seen, but much oftener can be felt and heard. Such a finding helps at least to determine the position of one part of the stomach, and can thus assist one in reaching a diagnosis in doubtful cases.

Treatment of Chronic Dilatation and Benign Pyloric Stenosis.—When the atony and dilatation are consequences of chronic inflammation, as in chronic gastritis, Turck[32] recommends **Lavage** and, when this does not efficiently cleanse the mucous membrane, **Douching** with his specially devised double sprinkling tube. When both these fail, he employs his gyromele to remove the adherent mucus and colonies of germs.

Large doses of **Olive Oil,** 3 to 5 ounces (100 to 150 grm.) daily are praised by Cohnheim[33] as a means of curing dilatation from pylorospasm by overcoming the spasm. Such spasms are especially likely to be provoked by ulcers or fissures in the pyloric region, and are cured or greatly lessened by such a liberal use of the oil. When the pylorospasm results from excessive secretion of HCl, even from continuous hypersecretion, cure or marked improvement may be expected. The methodical employment of the same remedy likewise accomplishes very beneficial results in dilatation from organic stenosis of the pylorus, the oil acting mechanically by lessening friction.

In cases of stenosis from carcinoma with consecutive gastrectasis the oil prevents or lessens pylorospasm, and the cure of ulcer of the pylorus with or without hyperchlorhydria, can be effected, according to Cohnheim, when there are no complications such as perigastritis. The oil must be persisted with a long time, and is to be given three times a day half an hour to an hour before meals. A wineglassful early in the morning, and a tablespoonful before dinner and supper suffice as a rule. It acts as a sedative in pylorospasm—like belladonna—and when pure and fresh, has no unpleasant by-effects. Only exceptionally do patients take it unwillingly, and in such cases one may give instead an emulsion of oil of almonds. In genuine hysterical cramps of the stomach the oil does no good, and by this therapeutic test, therefore, we may distinguish the purely nervous pylorospasm from that produced by hyperacidity or some organic cause.

Einhorn[34] has seen cases of dilatation due to a benign stenosis recover under medical treatment, though when the stenosis is caused by ulcer, he advises operation. One of the reviewers (Reed) has lately seen in consultation a case of severe and previously very persistent pylorospasm, not yet reported, which responded promptly to the oil treatment above described. At the meeting of the American Gastro-enterological Association, April 24 and 25, 1905, Brewer[35] read a paper in which he advocated prompt surgery as the best and virtually only remedy for benign stenosis of the pylorus, and condemned not only drugs but all other measures as a waste of time. In the discussion which followed, Kaufman and Quintard both stated that they had frequently seen cases of benign stenosis of the pylorus recover under non-operative treatment.

A Valuable Aid in the Diagnosis of Pyloric Obstruction and its Cause.—In endeavouring to obtain a correct and early diagnosis of diseases of the stomach, the practitioner usually devotes a great deal of attention to the chemical analysis of the stomach contents, but is inclined to neglect the more important microscopical examination. In many cases the chemical analysis gives absolutely normal results; whereas, according to Ackerman and Gompertz[36] if the microscope be employed, evidence of a beginning stagnation may be detected. Hence when the diagnosis is in any way obscure it should be a routine practice to make a thorough microscopical examination of the contents of the fasting stomach. Such examination is especially indicated when the slightest suspicion exists of gastro-succorrhœa, stagnation—whether due to benign or to malignant obstruction—or ulcerating cancer not causing stenosis. The presence or absence of hydrochloric acid is easily determined with a microscope. The presence of unchanged epithelial cells signifies absence of HCl and pepsin; whereas the presence of free nuclei of leucocytes and of epithelial cells is positive evidence of the presence of hydrochloric acid and pepsin. The presence of sarcinæ, yeast cells and chains, food remnants, such as starch granules, muscle fibres, etc., proves the existence of stagnation. If the microscope shows the constant presence of pus and blood, and their origin from an acute phlegmonous gastritis or purulent inflammation in other parts can be excluded, a positive and early diagnosis of ulcerating interosteal carcinoma can be made long before a tumour is palpable, or characteristic symptoms are present. In all suspected cases, especially with progressive emaciation, anorexia, gastric distress, etc., with stagnation, but with achylia gastrica, an endeavour should be made to procure some of the fasting stomach contents for examination. Infusoria are always found with pus and blood, and these conditions are present only in cases of interosteal carcinoma not attacking the pylorus. They are found long before the appearance of a tumour. In the stagnating stomach contents containing lactic acid the sarcinæ are supplanted by the Oppler-Boas bacilli, and these should be considered of even more diagnostic importance as indicating malignant stenosis than the finding of sarcinæ in benign obstruction.

In pyloric carcinoma the situation of the growth is such that it is hidden by the liver, and the detection of these bacilli often leads to a diagnosis long before the tumour is palpable. However, if from any cause whatsoever, a pyloric obstruction occurs, the Oppler-Boas bacilli are liable to be found in the stagnating stomach contents. According to Cohnheim, about 99 per cent of the cases with stagnation and Oppler-Boas bacilli or lactic acid are pyloric carcinoma. Therefore, the presence of the Oppler-Boas bacilli is an indication for operation according to the same authority.

Displacements of the Viscera.—Berhand Dawson[37] states with reference to the diagnosis of gastroptosis that the subjects are frequently spare and often stoop, the skin is dry and lax, the thorax is elongated, the downward movement of the diaphragm marked, and the abdominal wall lax. A prolapsed stomach is revealed by means of inflation, trans-illumination, or the fluorescent screen. Inflation is done either by pumping air in through an indiarubber stomach-tube, or by the evolution of CO_2 gas within the stomach by administering tartaric acid, 45 grs. in a cachet, and following this by 60 grs. of carbonate of soda in 2 ounces of water. Trans-illumination being rather complicated is less suitable as a routine practice. The stomach area can be demonstrated on the fluorescent screen by first administering bismuth, or better, by inflation with air, when it appears as a light area. Symptoms, when present, may include aching pain in the back, a feeling of sinking at the epigastrium, dragging down pain in the abdomen, feeling of fulness and flatulency. Whether dilatation co-exists with prolapse, as it frequently does, is determined by the measurement between the two curvatures, and better by an estimation of the motor power of the stomach-wall.

The treatment given by the author presents no new facts. As regards surgical treatment he states that gastro-enterostomy is useless for gastroptosis, though if mechanical treatment should fail, short-circuiting between the stomach and bowel may be desirable.

The whole subject of the visceral displacements is elaborately discussed in Reed's recently published "Diseases of the Stomach and Intestines," already referred to[8].

Rattermann[38] suggests that if, in any doubtful case, there is a prolapse of the stomach and intestines, or both, the physician standing behind the patient with his hands placed over the latter's abdomen on either side, can, by pressing upward and thus elevating the viscera generally, give immediate relief to the dragging sensation previously experienced. Whenever such relief can be thus afforded, Rattermann insists that an abdominal supporter should be worn.

Most of the specialists in diseases of the digestive organs, who have written lately on this subject—including the above-mentioned, as well as Steele[39], Einhorn[40], Kemp[41], and Benninghoff[42]—claim markedly palliative, and often curative results from medical and mechanical methods with a generous diet and all building-up measures designed to strengthen the musculature and put on flesh. Most of them

apparently, still depend largely on the usual elastic belts for abdominal support, though Kemp agrees with Rose and Reed in giving the preference usually to the more efficient support afforded by broad strips of adhesive plaster left on the abdomen for several weeks at a time.

Harlan[43] advocates the fixation of dislocated kidneys by operative methods, and advises operation also in any ptosis complicated by gastric or duodenal ulcer.

An exceptionally valuable communication on this subject embodies the description and illustration of a new belt for displacements of the viscera, invented by Bradburne[44]. This (as will be seen from the accompanying cut, *Fig.* 63) consists essentially of two thigh rings of rubber tubing covered with flannel. Each encircles the upper part of one thigh, and to it is attached by a buckle one end of each of three strips of elastic webbing which pass obliquely up over the abdomen, and thence on around so as to encircle the entire body. When drawn snugly these can give efficient support at the lower part of the abdomen, just where it is needed, and cannot slip up as other elastic belts are always inclined to do. This belt seems to possess real advantages for use in the various abdominal ptoses.

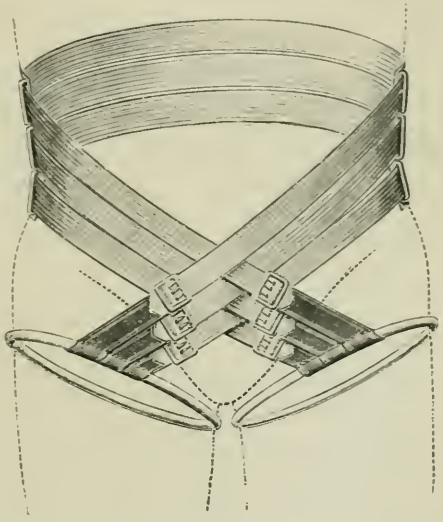

Fig. 63.

Hutchison[45], writing under the head of "The Dietetic Treatment of Dyspepsia," states that in functional or nervous dyspepsia diet schedules often do more harm than good, and in such cases he counsels patients to eat whatever is found to agree with them. When either the secretory or motor power of the stomach is impaired, the diet, he urges, should be that most easily dissolved and passed on. Coarse vegetables are too bulky, and muffins, cheese, new bread, and articles rich in fat usually do not receive thorough mastication, and are likely to disagree. The meals as a rule should be small. He agrees with Leube and most authors in considering as among the most digestible foods: (1) Beef-tea, eggs, milk, and biscuits; (2) Sweetbread, boiled fowl or pigeon; (3) Scraped under-done beefsteak, potato purée, stale bread; and (4) Roast chicken or veal, cold roast beef (under-done), white fish, macaroni, rice, chopped spinach. The food in general should be palatable, and eaten amid pleasant surroundings to promote

secretion. In acute gastric catarrh he would withold all food to give absolute rest, feeding per rectum if necessary in prolonged cases. In chronic gastritis, he says, avoid all irritating articles, such as the condiments, skins and seeds of fruit, etc. Sugar is to be avoided, because so prone to fermentation. Hutchison in the same paper advises as to the diet appropriate to ulcer and other organic diseases of the stomach.

Bienfait[46] recommends strongly the administration of rather large doses of the **Continuous Electrical Current** (galvanism) directly through these centres with the positive pole over the last dorsal vertebra, and the negative opposite over the centres in front. The current is increased rapidly from 30 upwards to 50 ma. according to the endurance of the patient. This is not a panacea, but is effective in a large proportion of cases, as one of the reviewers can personally testify.

Bacteria of the Stomach.—In view of the bacteriological advances made in connection with many other diseases and the advantages reaped therefrom, it is highly probable that researches in the bacteriology of gastric diseases will in the future offer a source of much assistance in both the diagnosis and treatment of those conditions.

Such a study has been made by Palier[47], who records as follows the results of his investigations. He examined the gastric juice of 3 cases of cancer, 5 of hypochlorhydria, and 5 of hyperchlorhydria. He found that carcinoma ventriculi is bacteriologically characterized by the following trio: (1) The presence of vibrio geniculatus ventriculi; (2) The presence of numerous staphylococci; and (3) The absence of the fungi, that is, mycelia. In none of the other cases was this combination met with. In simple hypochlorhydria vibrio geniculatus ventriculi may be found, but any other micro-organism may also be met with, either alone or in combination with it. In hyperchlorhydria or chlorhydria, yeast and fungi, or rather, mycelia, are met with, and also occasionally sarcinæ, and a small bacillus which is Gram negative, and in cultures discharges an ammoniacal odour. For clinical purposes one needs to make cultures only in a test-tube of sugared agar by stab, and on slant agar by smear, leave them at 39°C. for forty-eight hours, or in summer in the room temperature. Ordinary neutral culture mediums are satisfactory, no acid mediums being necessary or advisable.

The bacteriological examination of the stomach contents should become as much routine work in clinical medicine as that of the sputum.

Aërophagia and Flatulence.—Spivak[48] reviews at considerable length the literature on air swallowing, and discusses in detail its etiology, symptomatology, diagnosis and treatment. He believes that the digestive tube, like all hollow organs of the body, contains normally a certain quantity of air, but that this quantity may be increased to an abnormal amount from the following sources:—

1. Fermentation.—Food may undergo acid fermentation (lactic, butyric) or alcoholic fermentation.

2. Putrefaction.—Albuminous substances may undergo decomposition.

3. Alimentary.—Certain articles of food and drink produce flatulency, as cabbage, beans, peas, carbonated waters, etc.

4. Intestinal respiration.—Flatulence due to exchange of gas (CO_2 and N) between the blood and the contents of the stomach and intestines. This is supposed to be the explanation of the great evolution of gas occurring after severe pain, major operations, or in neurotic individuals. Nothing definite is known as to the source of the gases eructated in such cases, but it is surmised that they are discharged from the blood.

5. Aërophagia, or swallowing of air.—Spivak states that swallowing of air in small quantities is a normal phenomenon. Abnormal swallowing of air may be voluntary (hysteria), and involuntary (dyspepsia, idiopathic). Air may enter the stomach by swallowing, aspiration, or gulping. Cases of aërophagia are not as rare as earlier writers used to think. Although this condition, as a rule, is a sequel to some other affection, yet when it is let alone it may, in its turn, produce grave symptoms and undermine the health. Aërophagia, tympanites, nervous eructation, pneumatosis, and merycism have an etiologic relationship.

The best treatment in voluntary aërophagia is to impress the patient with the fact that he can stop it, if he will.

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STOMACH (Surgery of). *A. W. Mayo Robson, D.Sc., F.R.C.S.*

Surgical Treatment of Non-Cancerous Affections.—By far the greater number of stomach ailments are purely medical from first to last. I think, therefore, that gastric cases should come to the surgeon through the physician or the regular medical attendant, whose duty it is to discriminate between the functional cases that will yield to medical treatment, the cases of organic disease that should have a fair trial of general treatment before the question of surgical treatment is raised, and the more serious cases in which the aid of surgery ought to be at once invoked.

If a rule had to be formulated as to what non-malignant stomach cases are suitable for surgical treatment, I should say: That whenever a patient with a gastric ailment suffers from serious disability, pain, or mal-nutrition, that fails to yield in a reasonable time to general and medical treatment efficiently carried out, the question of surgical treatment should be raised.

There are dyspeptics from alcohol, overfeeding, mental anxiety, and neurasthenia that can as a rule be cured by rest and general treatment, and in which the question of surgical treatment can seldom arise. Even in certain organic diseases, such as acute gastric ulcer with pain and vomiting, rest and medical treatment will effect a cure in a great proportion of cases; but in relapsing or in chronic ulcer of the stomach or duodenum, in perforation, in recurrent hæmorrhage, in disabling adhesions from perigastritis, in hour-glass stomach, in obstructive dilatation and in some other conditions, medical should give place to surgical treatment

Simple Ulcer.—The surgical treatment of ulcer of the stomach, apart from its many complications, has given rise to more controversy than has perhaps any other question in gastric therapeutics. I think the physicians have been apt to underestimate the grave mortality of gastric ulcer, even in the face of such statistics as have been given by Debove and Rémond, which are accepted and quoted by Einhorn.

We may, on ample evidence, accept the fact that at least 25 per cent of all cases of ulcer of the stomach treated medically ultimately succumb to the disease or to one or other of its complications. As surgeons we only see the worst cases that have failed to yield to medical treatment; yet arguing from my own experience alone, in over 300 operations of various kinds for non-malignant diseases of the stomach, which had failed to yield to medical treatment, the total mortality in this worst class of cases has only been a little over 3 per cent

Treatment.—The surgical treatment of ulcer apart from complications is first to complete the diagnosis by opening the abdomen, and this I prefer to do by a vertical incision through the inner third of the right rectus, when by splitting the muscle and afterwards suturing the aponeurosis separately, a firm scar results without danger of hernia; moreover it is easy to lengthen the incision without interfering with the umbilicus.

The history of the time of onset of pain after food will be some guide

as to the site of the ulcer. For instance, if the pain has occurred immediately after food the ulcer will probably be near the cardiac orifice or on the lesser curvature; if two to three hours after, it will be at the pylorus; and if four hours after meals and relieved by food, the ulcer will generally be found in the duodenum.

Should the area of ulceration appear to be limited and freely accessible, the question of *excision of the ulcer* may be worth considering. If the ulceration is at the pylorus, especially if it be associated with thickening resembling a neoplasm, and if the pylorus be free from adhesions, the removal of the ulcerated pylorus may be advisable, for it has to be borne in mind that chronic ulcer has in many cases been the site of origin of cancer. I have excised the pylorus or otherwise removed the ulcerated area nine times for chronic ulcer, all the patients having recovered from the operation. The ultimate results are no less interesting than instructive: 6 of the patients are now living and in good health from one to seven years after operation; 1 cannot be traced; 1 relapsed three months after pylorectomy, and in one case, after two years of health, fresh ulceration with perforation occurred.

If, however, the pylorus is fixed by adhesions, and its removal would be difficult, or if an ulcer of the stomach be adherent to the liver or pancreas, it is much wiser to be content with the operation of gastro-enterostomy, which yields such satisfactory results, both immediate and remote. Even after the excision of an ulcer, it may be wise to perform a gastro-enterostomy in order to set the stomach at rest, and secure the healing of other ulcers that so frequently co-exist with the one causing serious symptoms.

With few exceptions, the operation of choice in chronic ulcer of the stomach is *gastro-enterostomy*, which by affording a free outlet from the stomach, prevents stasis of food, relieves hyperchlorhydria, and secures physiological rest to the whole organ. Moreover, it is an undoubted fact that gastric ulcers are generally multiple and that not infrequently duodenal ulcers co-exist. The removal of one ulcer would therefore not be likely to cure the disease, whereas a gastro-enterostomy will prove curative to both gastric and duodenal ulcers, whether one or many be present.

Duodenal ulcer is, I feel sure, a much more common disease than is generally appreciated, for some of the patients afflicted with this disease appear at times to be unusually hearty, their only complaint being that of a burning sensation three to four hours after meals, a pain that may be aptly termed a "hunger pain," since it is relieved by taking food. These patients are frequently awakened by similar sensations about midnight or at one or two o'clock in the morning, and have either to take a dose of carbonate of soda or a drink of milk to relieve their discomfort; yet at any moment they may be attacked by perforation or hæmorrhage. In other cases, the well-known symptoms of duodenal ulcer are present, and are associated with melæna or hæmatemesis. For duodenal ulcer I do not think any other operative procedure than gastro-enterostomy is either necessary or

advisable, unless there be perforation ; and even in case of perforation, if the patient is in a fit condition to bear it, a gastro-enterostomy ought to be done at the same time that the perforation is repaired.

I prefer the *posterior operation* both for gastric and duodenal ulcers, making the opening into the stomach close to the lower border and the opening into the jejunum as near to the duodeno-jejunal junction as practicable. I never see regurgitant vomiting, and as a rule recovery is as smooth as after a simple ovariotomy.

The after results of gastro-enterostomy in ulcer of the stomach, pylorus, and duodenum are really very remarkable ; the pain vanishes, food can be taken freely, anæmia disappears, and the patient as a rule rapidly puts on flesh, so that I have seen several cases to double their weight within the first few months after operation. Including every instance, whether simple or malignant, in which I have performed the operation of posterior gastro-enterostomy, either in hospital or in private practice, there have been 186 cases, of which 179 recovered from operation, thus giving a mortality of 3·7 per cent.

Of the 97 posterior gastro-enterostomies that I have performed in my private practice for ulcer or its complications, 96 have recovered, thus giving an operative mortality of 1·1 per cent.

Hæmorrhage.—I feel sure that the opinion held by many practitioners that bleeding from the stomach and duodenum rarely proves fatal, requires careful revision, just as does the question of its treatment.

It is desirable that we should not consider the vomiting of blood from cirrhosis of liver, aneurism, heart disease, or other general conditions which are only amenable to medical treatment, but that our remarks should be confined to two classes of cases :—

1. The acute, often very severe attacks of gastrorrhagia that occur in young anæmic women, suddenly, without any warning, and often without any symptoms pointing to ulcer of the stomach, attacks that at the time appear very alarming, but which usually cease spontaneously and do not tend to recur.

2. The cases associated with chronic ulcer, in which there may be : (*a*) An acute fulminating hæmorrhage, ending rapidly in death ; (*b*) Severe bleeding, which, though arrested temporarily, tends to recur in a few hours or a few days, and which after one or more relapses may prove fatal ; (*c*) Slight, frequently recurring hæmorrhages, tinging the vomit and leading to anæmia ; (*d*) A more or less daily slight bleeding into the bowel that may only be noticed as melæna by a skilled observer when advice for anæmia and ill-health is sought. I could give examples of all these varieties, as I have had operative experience of them all, and have also had the opportunity in several cases of examining the stomach at the time the bleeding was going on.

In the first class of cases occurring in anæmic girls and young women, seeing that under rest and treatment the hæmorrhage usually ceases and does not tend to recur, operation is seldom required and is rarely justifiable ; but, that no absolute rule can be formulated, is shown by cases on which I have operated ; some of which I have reported[1].

Recurrence of bleeding is the indication for operation, and personally I should not hesitate to advise it in any case where the bleeding has recurred, or when it is continuing in spite of general treatment.

In the second class, the fulminating hæmorrhages are often almost beyond relief, as death occurs before operation can be arranged for ; in one case that I saw personally, the patient was apparently well one hour, and dead half an hour later. But if the hæmorrhage does not lead to sudden death, and shows signs of continuing, and there is a history suggestive of chronic ulcer, operative treatment should be resorted to without delay. In the other forms of hæmatemesis coming under the second heading, the bleeding is associated with obvious organic disease, and recurrence of hæmorrhage will be almost certain to take place unless the disease giving rise to it is arrested. In advocating surgical treatment for these cases, one of the strongest arguments in its favour is that by the same operation the bleeding can be arrested and the disease giving rise to it cured.

Although operation while the bleeding is in progress is as a rule undesirable, it cannot always be avoided, as in order to save life it may be necessary to act at once ; when, if the patient is in a fit condition to bear it, the stomach should be opened and the bleeding vessel found if possible and ligatured or otherwise treated locally.

If the bleeding be from an ulcerated pylorus or from some obvious spot on the stomach wall easily accessible, the ulcerated area may be excised and at the same time a gastro-enterostomy should be performed to secure physiological rest. If, however, the patient is too ill to bear an exploratory gastrotomy, I have found gastro-enterostomy alone to be sufficient to arrest the bleeding, and when the operation is undertaken in a quiescent period, between the attacks of bleeding, unless the ulcer is very obvious, I decidedly prefer to adopt the indirect method alone. By indirect treatment I refer to gastro-enterostomy, which in my experience affords the most useful and safest method of treatment ; for at the same time it drains the stomach of its irritating contents, and prevents distension and stretching open of the bleeding vessels, while it secures healing of the bleeding ulcer, and also of any other gastric or duodenal ulcers that may be present.

I have operated while the bleeding was going on in 4 cases, and all the patients recovered and remain well. (In 2, numerous bleeding points were ligatured *en masse*, and gastro-enterostomy was then performed ; in 2, gastro-enterostomy was performed without ligature of the bleeding vessels.) In 22 patients operated on for hæmatemesis between the attacks, a gastro-enterostomy was immediately successful in 20, was followed by death from exhaustion at the week end in one, and in another case operation was followed by recurrence of bleeding a month later.

Adhesions of the Stomach to adjoining organs or to the abdominal parietes are generally the result of perigastritis due to gastric or duodenal ulceration, though they may result from extraneous causes such as gall stones, pancreatitis, hepatic abscess, and colitis. However

occurring, they are frequently a source of great irritation and of severe pain, setting up a chronic dyspepsia, which, as one might expect, resists all medical treatment. The pain is most pronounced when the stomach is adherent to the anterior abdominal wall, for not only does it give rise to chronic painful dyspepsia, but also to severe pain on movement; and if the adhesions be away from the extremities of the stomach they may give rise to hour-glass deformity.

When the adhesions are at the pylorus they may lead to dilatation of the stomach owing to kinking, as I pointed out in a paper before the Clinical Society of London in 1893, when I related a number of cases in which great benefit had been derived by the comparatively simple operation of *gastrolysis*, an operation which had, I believe, not been previously suggested as a definite procedure.

My experience of the operation of gastrolysis, including those cases where it has been an adjunct to other operative procedures, for instance, to operations on the gall bladder and bile ducts and pancreas, has been extensive, and a number of cases have been recorded[2]. So far back as 1890 I pointed out the frequent association of dilated stomach and cholelithiasis, owing to adhesions of the pylorus to the gall-bladder.

As an operation, *per se* gastrolysis can only rarely be sufficient, for if the perigastritis has been extensive and the adhesions are numerous, a mere division of them without an omental plastic procedure would only lead to their re-formation. Where the adhesions are very firm and extensive and have led to secondary dilatation of the stomach, as after sub-acute perforation of the duodenum or pyloric end of the stomach, I always perform a gastro-enterostomy either with or without gastrolysis, so as to secure thorough drainage of the stomach and a cure of the ulcers that have set up the perigastritis.

Some years ago I proposed, in cases where adhesions around the pylorus had been separated, that if practicable the right border of the omentum should be brought up and interposed between the recently separated surfaces, so as to prevent short intervisceral adhesions; and an extended experience of this procedure, omphaloplasty as an adjunct to gastrolysis, has led me to continue the practice, which has been acknowledged and adopted by other surgeons in like cases. Possibly the use of the cargile membrane or of mucilage may be of service, but I have had no experience of either method.

In separating adhesions, it should be borne in mind that they are as a rule protective, and in some cases may cover up a perforation, which their separation may reopen; but under such circumstances the adhesions will be so firm and so extensive as to preclude the operator being content with gastrolysis alone.

The immediate results of simple gastrolysis are generally good, and as the operation has no mortality *per se*, it alone may be sufficient in occasional cases. The ultimate result in a number of my early cases has been excellent, but in others a further operation such as gastro-enterostomy has been necessary.

Perforation.—While any discussion on the surgery of non-malignant

diseases of the stomach would be incomplete were the subject of perforation to be left out, the views of the profession are so definitely made up on it that it need not be discussed at length. Though patients do occasionally recover from perforation without operation, as I myself have witnessed, and have subsequently proved by having to operate later for other complications resulting from the ulcer that had perforated ; yet the exception only proves the rule, and I think we shall all agree that if we can operate on cases of gastric perforation within a few hours of the accident, success will be considerable, whereas every hour of delay will add to the danger

In the second edition of "Diseases of the Stomach," a table of collected cases is given, that shows the serious results of delay :—

	Total cases.	Recovered.	Died.	Percentage of deaths.
Under 12 hours- -	49	35	14	28·5
From 12 to 24 hours	33	12	21	63·6
From 24 to 36 hours -	16	2	14	87·5
From 36 to 48 hours -	2	—	2	100·0
Over 48 hours - -	35	16	18	51·5

In Mr. Crisp English's latest statistics on a series of 60 consecutive cases operated on at St. George's Hospital, the mortality was 48 per cent.

Although the symptoms of ulcer may be latent in about 20 per cent of cases and only slight in others, yet in fully 50 per cent, or probably more, there are serious symptoms of ulcer which should lead to very thorough medical treatment, or that failing, to curative surgical treatment, before the onset of perforation. So that, besides advocating early operation in case of perforation, I think we ought to urge quite as strongly preventive treatment; in other words, the curative treatment of ulcer, so as to save the serious sequelæ of perforation and hæmorrhage.

In the operative treatment of perforation much will depend on the variety, whether acute, subacute, or chronic. In acute cases where the peritoneal cavity is flooded with the stomach contents, I strongly advocate, after closure of the perforation, lavage with normal saline fluid, followed by supra-pubic drainage. In subacute perforation, where the accident has occurred when the stomach was empty and where the opening is probably small, or even partly occluded by lymph or omentum, the abdomen will be much less soiled, and cleansing may be accomplished by thorough wiping with gauze swabs, when drainage may be unnecessary.

In chronic perforation, extravasation is limited by a protective barrier of lymph. The effusion usually makes its way upwards, being recognized as a subphrenic abscess, for which incision and drainage are required without disturbance of the limiting barrier, and without any attempt to suture the stomach for closure of the opening, for which nature is as a rule quite competent. If the perforation be near the pylorus, a gastro-enterostomy may be advisable, both in order to

secure healing of the perforated ulcer and any other ulcers that may be present, and to stave off the after effects of contraction and consequent stenosis. Even where the ulcer is not near the pylorus, if the patient is in a condition to bear it, the performance of gastro-enterostomy may be a wise procedure for securing complete rest to the stomach and healing of the perforated and any other ulcers.

As surgeons, we cannot rest content with a 40 to 50 per cent mortality, for if we can have cases of perforation handed over within a few hours of rupture, we should be able to diminish the death rate to 10, or possibly even 5 per cent, as in a series of cases lately reported by T. S. Kirk[3], where of 11 cases of perforation, 10 were operated on in from $\frac{1}{4}$ to 10 hours after the accident, and all were saved.

Hour-glass Contraction of the stomach, so far as it comes under the notice of the surgeon, is, excluding cancer, dependent on contraction due to ulceration, or on adhesions. It must be far less common than is usually thought, for I have personally operated on 25 cases, and a colleague has operated on 18; of these 43 cases, 37 were the results of ulcer or perigastritis, and in two the stomach was trifid. Surgical treatment is alone of service in this disease, and the conditions to be aimed at are, to overcome the obstruction, and to secure physiological rest for the healing of the ulcer.

The operations available are: (1) Gastroplasty; (2) Gastro-enterostomy; (3) Gastrolysis; (4) Gastro-gastrotomy; (5) Excision of the ulcerated area or partial gastrectomy; (6) Divulsion of the stricture; and (7) Jejunostomy. Before any curative procedure is adopted it is essential that a complete examination of the whole of the stomach should be made, otherwise a stenosis near the cardiac end may be missed, as in at least two recorded cases. The choice of operation will depend on the condition found.

Treatment.—If adhesions be the cause of the constriction, their treatment by gastrolysis will be necessary, though other treatment will at the same time usually be called for, as in one of my cases where a gastro-enterostomy, and in another where gastroplasty was performed.

If the constriction be near the centre of the stomach and free from active ulceration, and if the pylorus is patent, a gastroplasty alone will be required. In my own 10 cases of simple gastroplasty, all the patients recovered, and 6 are known to be in good health at the present time, from two to five years later; 1 was known to be well a year later, but no further record is obtainable; 1 required gastro-enterostomy two years later for ulcer of the pylorus, the gastroplasty being then quite sound; 1 was well for four years, had recurrence of ulceration and died of hæmatemesis; 1 writes to say that after five years she has had some pain, but does not need medical attendance.

If the pylorus be also stenosed, a gastro-enterostomy must be associated with the gastroplasty, but if a double stomach sac exists, with stricture in the centre of the stomach and at the pylorus, it may be advisable to do a gastro-gastrostomy together with a gastro-enterostomy, or better, a gastro-enterostomy with two openings into the

jejunum, one from either sac ; this I propose to perform should such a case come under my notice.

If active ulceration with considerable induration be present, the proximal cavity being dilated and the pylorus patent, a posterior gastro-enterostomy will answer all the indications. In 7 cases of hour-glass stomach on which I performed posterior gastro-enterostomy, all recovered, and 5 are well at the present time, two to five years after operation ; 1 died of cancer of the sigmoid flexure four years later, and 1 of cancer of the stomach within a year of operation.

If the induration and ulceration are forming a tumour that is doubtfully malignant, it may be wise to excise the ulcerated area. This I did with success in one of my cases, which on examination afterwards proved to be cancer developing on ulcer ; the patient lived for four years and enjoyed perfect health for over three years.

If the pouches on each side of the constriction are dilated and the pylorus is patent, a simple gastro-enterostomy into the proximal sac may be performed instead of a gastroplasty.

Divulsion of the stricture or of the pylorus is not as a rule advisable, as being unlikely to give permanent relief, though in one reported case of stricture near the cardiac orifice, divulsion appears to have answered, when associated with a gastro-enterostomy.

Jejunostomy as a temporary measure is advisable if the patient is very feeble, and if the stomach presents signs of very extensive disease that would involve a long operation.

Tetany as a Complication of Gastric Dilatation.—This serious and often fatal condition must be rarer in point of observation than in fact, for I have seen a considerable number of cases and have operated successfully on several. In a paper published in the *Lancet*[4], I had the honour of first suggesting the surgical treatment of tetany due to gastric stasis by pyloroplasty or gastro-enterostomy. These operations act by draining the stomach, at the same time removing the source of the poison and arresting the painful pyloric spasm ; thus by one operation removing the causes which combine to produce the tetany. In that paper, I gave several marked examples of the success of this treatment, which I have since proved by additional cases to be reliable and efficient.

Treatment,—The operation which I now advocate is posterior gastro-enterostomy, the effects of which are more satisfactory than those of pyloroplasty, though the modification known as Finney's operation may possibly prove to be equally efficient.

The prognosis of tetany medically treated has been shown by various writers to be extremely serious ; for instance Frankl-Hochwart gives the mortality as 90 per cent. Almost without exception tetany of gastric origin occurs in old standing disease, so that if surgical treatment were adopted earlier in these disabling conditions, we should banish altogether that class of cases which furnishes us with the desperate forms of this complication.

Dilatation of the Stomach.—From the point of view of treatment it

is of importance to distinguish between *primary* (atonic or idiopathic) and *secondary* (or obstructive) dilatation, for the former, unless accompanied by stasis with serious inanition, is a condition that is usually amenable to medical and general treatment and one in which surgical measures are seldom called for; whereas in secondary or obstructive dilatation, whether from external pressure, growth, hypertrophy, stricture, persistent spasm, or adhesions, medical treatment has decided limitation and should not be too long persisted in after stasis is found to exist.

Dilatation may exist without stasis, though there is seldom stasis without dilatation. A stomach that is not empty six hours after a meal is under suspicion, but if after eight hours, remnants of food are found in the lavage, stasis undoubtedly exists. If with stasis, visible peristalsis be present, obstruction exists that will only be cured by surgical treatment. If there be no obvious peristalsis, yet stasis persists after lavage and general treatment have been tried, surgical treatment should replace medical treatment. Pain and loss of flesh associated with dilatation are also indications for surgical treatment, if general means have failed to relieve.

Treatment.—Of the operative measures that may be employed in dilatation, *Gastro-enterostomy* is undoubtedly the operation to be relied on before all others in the treatment of secondary gastric dilatation, and in that form dependent on obstruction at the pylorus the results are simply marvellous. Pain, vomiting, and indigestion as a rule disappear within 24 hours of operation, food can be taken and retained, and weight is rapidly regained. The anterior operation does not in my experience yield the same results as the posterior, and is apt to be complicated by regurgitant vomiting and later by peptic ulcer of the jejunum. The posterior operation is the one that should be performed wherever possible, as it involves no more difficulties than the anterior, can be performed in an equally short time, and is not followed by regurgitant vomiting, and extremely rarely by peptic ulcer of the jejunum. I always perform it unless the meso-colon is contracted and seriously shortened, or unless the posterior wall of the stomach is so involved in disease that it is not available for the anastomosis.

The secrets of success are to make the anastomotic opening as near the lower border of the posterior surface as possible, and to leave as small a distance as practicable between the opening in the jejunum and the duodeno-jejunal junction. Though personally I prefer to make the junction by a serous and a marginal continuous suture around a decalcified bone bobbin that dissolves in 48 hours, as the method has given me such satisfactory results, yet the suturing may be done without the bobbin and in exactly the same way as when the bobbin is used. For several years I have not used the Murphy button in this operation; and as it practically saves very little time and is liable to fall back into the stomach and produce further disturbance, I cannot recommend its employment. My special rubber-covered clamps, and the round curved needles that I have used

for intestinal and stomach surgery for several years, facilitate the operation.

Stenosis of the Cardiac Orifice of the stomach due to the cicatrization of an ulcer which has failed to yield to treatment by bougies, may at times be advantageously treated from the gastric aspect by opening the stomach and dilatating from below, after which the opening may be kept patent by the regular use of bougies introduced through the mouth.

I have had no experience of the method of dividing such a stricture by means of a string worked rapidly up and down like a "bow string," nor of the methods of instrumental division, which have always seemed to me to be dangerous. While treatment is being pursued, a gastrostomy will enable the patient to be nourished, and it is advisable to keep the gastrostomy opening from completely closing by the occasional passing of a bougie so that it may be used for feeding if the stenosis of the cardiac orifice or lower end of the œsophagus should recur. I have two patients living some years after a gastrostomy performed under these conditions, and they still occasionally make use of the artificial opening in the stomach, and find no inconvenience from it.

Acute Dilatation of the Stomach.—In the great majority of cases the issue has been fatal, and all treatment has been unavailing. But the disease is by no means necessarily lethal, as I have had in my own experience three cases in which the symptoms have subsided as the result of treatment, and the patients have progressed to recovery.

In the early stages, recourse should be had at once to lavage of the stomach. If the organ rapidly fills after it is emptied, the tube may be left in for a time or the lavage repeated. The position of the patient may be altered, so that he lies prone in bed, with a pillow under the pelvis and the lower part of the abdomen. In the severer instances it may be advisable to open the stomach and drain, performing in fact a gastrostomy. Although gastrostomy has hitherto proved fatal, an examination of the recorded cases shows that all the patients upon whom it was practised were moribund or almost in the last extremity; the operation is therefore one which has not yet had a fair trial.

As I have suggested before, recourse may be had to gastro-enterostomy, whereby the stomach is drained continuously into the intestines. This I would advise in case of failure of other remedies, if the intestines do not participate in the distension.

Acute post-operative Dilatation of the Stomach.—Some of the cases of ileus after abdominal operations are due to acute dilatation of the stomach, from primary gastric atony, which, once initiated, tends to persist and get worse owing to the distended stomach dragging on and kinking the duodenum, thus leading to shock by pressure on the heart without there being any sign of sepsis. In some cases the duodenum participates in the dilatation apparently owing to pressure of the superior mesenteric vessels on the third part of the duodenum which they cross transversely; it is in such cases that the prone position

may afford some relief. In all cases of ileus after operation the use of the stomach tube should not be neglected, and if repeated lavage, the prone position, and general treatment fail to bring about relief, the question of gastro-enterostomy should be considered, if the intestines do not participate in the paralysis.

Acute Phlegmonous Gastritis may be circumscribed, or diffuse, and may occur at any stage. The diffuse form appears to be inevitably fatal, all the recorded cases having died rapidly. Although gastrectomy might be salutary, yet the condition of the patient is one that in all the cases hitherto reported would seem to have been hardly justifiable. The circumscribed form in which there may be one or more abscesses in the stomach wall, is less acute and its course more prolonged. An exploration of the stomach may reveal the cause and lead to the evacuation of pus. I have recorded[5] a case that I think was of this character, in which evacuation of the abscess into the stomach and posterior gastro-enterostomy were followed by complete and permanent cure.

Congenital Hypertrophic Stenosis of the pylorus must be, from the number of reported cases, far from rare, and according to Monnier, 80 per cent of cases die unless treated surgically. Some few cases have been recorded as having yielded to medical and general treatment, but this should not be persisted in so long that the patient is too ill to bear surgical treatment. Whenever the combined symptoms of vomiting with visible peristalsis and pyloric tumour are present, surgical treatment alone is likely to be of service. Four operations are available: (1) Pylorectomy; (2) Pyloroplasty; (3) Pylorodiosis; (4) Gastro-enterostomy.

The operation of choice would be either pyloroplasty or gastro-jejunostomy, which can now be performed with much greater success than heretofore. The points to bear in mind are, not to defer the operation too long, and to select either one or other of the operations that I have named according to the conditions found when the abdomen is opened.

Injuries of the Stomach.—In injuries of the stomach, whether caused by stabs with a sharp instrument, or laceration the result of a blow in the epigastrium, or gun-shot accidents, operation should be resorted to at the earliest moment. Even if there is a doubt about the diagnosis of perforation, it will be safer to explore than to leave the case in doubt. Should there be any doubt as to whether a wound has perforated the stomach, air may be injected through an œsophageal tube, when, if the organ is intact, it will become distended and plainly outlined, whereas if perforation has occurred, the air will escape into the peritoneal cavity. In the case of a stab or gunshot wound, this method of diagnosis is, however, unnecessary; as, if the wound has perforated the abdominal wall, exploration for the purpose of repairing injuries should be set about at once.

Although a wound may have been repaired in the anterior wall of the stomach, the surgeon must not rest satisfied until he has carefully

ascertained if there is any perforation of the posterior wall, and he should also try to make certain that the posterior wall of the stomach has not been seriously damaged, as in one case of this kind related by Emile Forgue, injury of the posterior wall, though not sufficient to perforate, led to subsequent ulceration and to speedy death from hæmorrhage. The possible existence of multiple wounds must also be borne in mind.

Although the results of abdominal section for gunshot injuries in the recent war in South Africa were extremely unfavourable, and better results were obtained by rest and general treatment, it has to be borne in mind that the performance of abdominal section in war time presents very different conditions to operations performed in civil practice; moreover the small sized bullet travelling at an extremely high velocity actually produces a very small visceral opening, and as many of the injuries occurred in soldiers whose stomachs were empty, there was no leakage of the visceral contents. Thus the lessons of the South African war have little application to civil practice.

The record of cases quoted by Forgue and Jeanbrau show that the mortality increases in direct proportion to the delay. For instance, in 13 cases of wound of the stomach alone, without injury of other viscera, where operation took place within six hours, there were 9 recoveries and 4 deaths, but of 6 cases in which operation took place at a later period, there were only 2 recoveries.

In Injury of the Stomach due to the Swallowing of Caustic Fluids, the treatment will depend on the extent of the injury and the nature of the fluid swallowed. It is usually necessary to avoid feeding by the mouth, and at first probably rectal feeding will answer all requirements for two or three days. If, however, the pharynx, the œsophagus, and stomach are then discovered to be seriously injured, it may be wise to perform a jejunostomy in order to maintain the strength of the patient without contaminating the wounded surfaces by food or other irritants. At a later stage, should cicatricial stenosis of the pylorus occur, with consecutive dilatation of the stomach, gastro-enterostomy must be performed; or should there be stenosis of the cardiac orifice a gastrostomy may be required. It is a mistake to postpone a resort to surgery until there is no other alternative but that of leaving the patient to die of inanition. .

Hyperchlorhydria.—The term hyperchlorhydria is used to define that condition in which there is secreted a gastric juice that contains an excess of hydrochloric acid, which is associated with very definite symptoms of pain and discomfort directly the stomach has parted with the food from the last meal, a distress that is sometimes known as "hunger" pain.

The conclusions arising from a large experience of these cases, is that such symptoms are generally, if not always, associated either with ulcer of the stomach or of the duodenum, or both. If the symptoms are not relieved by careful dieting and medical treatment, surgical means should be resorted to in the shape of gastro-enterostomy; an

operation which under these circumstances is attended with little or no risk, certainly not more than 1 or 2 per cent, and which from personal operative experience I can say is likely to prove absolutely curative.

Under this same heading may be classed *Spasm of the Pylorus*, or Reichmann's disease, which is usually associated with excessive acidity and dilatation of the stomach. After failure of general means, surgical treatment may with confidence be recommended.

Pylorodiosis, or stretching of the sphincter, may be effectual in relieving spasm and in producing immediate relief to the obstruction, but it is apt to be followed by relapse from laceration of the mucous membrane and consecutive irritation leading to cicatricial stenosis; or if the stretching has been insufficient the spasm speedily recurs.

I have therefore given up Loreta's operation in favour of posterior gastro-enterostomy, which is not only a more efficient, but a very much safer procedure and one which proves curative in these cases.

Persistent Gastralgia.—Cases must have occurred in the practice of every physician in which, although the positive signs of ulcer were absent, gastralgia of such intensity has persisted, and in case of temporary relief has recurred so regularly, that the patient is brought to the last stage of exhaustion by an utter inability to take food because of the pain induced by swallowing even a mouthful of solids. Some of these cases are doubtless due to simple ulcer, but in others the absence of tenderness in the epigastrium, of rigidity of the recti, of regular vomiting, and of hæmatemesis, makes the diagnosis extremely doubtful.

Even rectal feeding and absolute rest in bed do not always cure the condition, and the patient gradually loses weight and strength and passes into a state of chronic invalidism, without any positive sign of organic disease. After all ordinary means have failed, gastro-enterostomy is well worthy of consideration, and I know by practical experience in several cases how beneficial it may prove.

Conclusions.—In giving my views on the surgical treatment of non-cancerous diseases of the stomach, I have recorded not only the immediate results of operative treatment, but have done my best to ascertain the after results of the cases operated on and the present condition of the patients after they have returned to their ordinary mode of life. With this end in view I wrote to the medical attendants of all the patients on whom I had operated in private, and directly to all my hospital cases. With only one or two exceptions the kindness of my medical *confrères* has enabled me to trace all my private cases, but as can be readily appreciated, the record of the hospital cases is much less complete.

The results will, I hope, prove of interest, for the subject is of considerable importance, especially in connection with the operation of gastro-enterostomy, which is still regarded by many as on its trial. A physician of great eminence told me that he hesitated to recommend it, first on account of the danger of the operation itself, and secondly because of certain complications, such as regurgitant vomiting, which

were apt to follow its performance. The first objection can at once be disposed of by my showing that in a large series of cases the operative mortality of posterior gastro-enterostomy for ulcer in my private practice has been only 1 per cent, and that I have had a consecutive series of 77 cases without a death; moreover, even including every one of my cases, both malignant and simple, in hospital and private, the total mortality has been only 3·7 per cent.

With regard to the second objection, the complication of regurgitant vomiting, this does not occur if the simple rules that I have mentioned are followed out, and I cannot see either the necessity or desirability of adding to the length of the operation by occluding the pylorus or by short-circuiting the jejunum in order to avoid a complication which should never occur.

The after results of gastro-enterostomy due to pyloric obstruction are most satisfactory, but the same cannot be said in atonic dilatation, for which surgical treatment is rarely justifiable.

As a means of securing rest to the stomach, pylorus, and duodenum, in hæmatemesis or melæna from ulcer, gastro-enterostomy has proved most efficient, and it is rarely necessary in such cases either to perform an exploratory gastrotomy for the purpose of seeking the bleeding point, or to perform excision of the ulcer.

In the treatment of chronic ulcer, the after results of the operation of gastro-enterostomy have shown in my hands 92 per cent of cures; but in estimating the value of gastro-enterostomy we must not lose sight of the fact that if gross organic damage with distortion of the stomach and intense perigastritis with adhesions have occurred, simple drainage of the stomach cannot undo the mischief of years of disease it can only enable the stomach to discharge its contents without serious effort and pain, and by averting the accumulation of irritating secretion it allows the old ulcers to heal and prevents the formation of new ones. It should not, therefore, be forgotten that many of these patients with advanced disease, though saved from the dangers of hæmorrhage and perforation, can hardly hope to be able to throw aside all prudence in diet, nor should they be led to suppose that if they depart from moderation in living they will be spared from some of their old pains and inconveniences.

Though the immediate effects of pyloroplasty are excellent, and in some cases absolutely curative, yet it must be confessed that the operation, ingenious and safe as it is, is too frequently followed by relapse to enable it to hold a place in the surgery of pyloric stenosis from ulcer, though it may possibly have a rôle in spasm or hypertrophy of the pylorus, especially in the congenital form, in which disease it has in fact given very fair results.

Perhaps the most extensive opening made by Finney may prove more successful, but the time has not arrived to pronounce an opinion on the after results of Finney's operation.

I think that I have said enough to show that although in the early stages of diseases of the stomach medical treatment has a great rôle to

play, yet that the time has passed when the physician is justified in persisting with medical treatment month after month and year after year, in cases which, if handed over to the surgeon in time, can be effectually cured, and that with little risk; but in which, if transferred in the later stages, when deformities have been produced, when the vital forces have been sapped, or when malignant disease has supervened, relief only, and that with increased risk, can be afforded by surgical treatment.

References.—[1]*Dis. of the Stom.* 2nd Ed. Baillière, Tindall & Cox; [2]*Dis. of the Gall Blad. and Bilè Ducts*, Baillière, Tindall & Cox; [3]*Med. Press*, Mar. 20, 1905; [4]*Lancet*, Nov. 26, 1898; [5]*Dis. of Stom.* 2nd Ed. Baillière, Tindall & Cox.

STRABISMUS. (*See* Motor Apparatus of the Eye.)

SYCOSIS. *Norman Walker, M.D.*

As the condition frequently affects the hair elsewhere, Hall[1] considers the male chin has no special right to the name. The differential diagnosis of simple sycosis from other conditions rests chiefly in the following points:—

1. Tinea barbæ in the early stages resembles it closely, but later is more tuberous, and in any case a microscopic examination should be decisive.

2. Eczema of the face does not affect the hair follicles so much, and is usually present in other places.

3. Syphilis must be differentiated by other evidence. Sycosis is usually thought to be acquired from a barber's shaving, but often occurs without this.

Treatment.—"For my part," says Hall, "I am convinced that the proper treatment consists primarily in constant close shaving; upon the regularity with which this is done each day will largely depend the success of your treatment." Sharp razors, very hot water, prolonged lathering, and previous oiling of the face are advised. Boric lint fomentations covered with gutta-percha are worn at night for many weeks, and in the daytime the following lotion is applied after shaving:—

℞	Calaminæ		Liq. plumbi	℥ss
	Zinci oxidi	āā ℥i	Aq. rosæ	ad ℥iv
	Glycerin	℥ii		

When the inflammation has subsided, pustules may arise here and there, and, before shaving, the hair in each is pulled out with tweezers, and ung. hydrargyri amoniat. or biniodide of mercury in spirit is put into the follicle by means of a pointed match. If the calamine lotion is too drying, then ung. glycerin, plumbi subacetatis is used, or the parts are treated with bay rum and spirit and then dusted with zinc oxide and starch powder. Lastly, he also attends to the general health of the patient. X-rays have now definitely vindicated their position as a remedy in this condition; they are not infallible, but often succeed where

others fail. Recurrence may occur, and it may be necessary to go on to the production of permanent alopecia. In other cases a few exposures do all that is required.

Reference.—[1]*Clin. Jour.* Oct. 5, 1904.

SYPHILIS. *J. W. Thomson Walker, M.B., F.R.C.S.*

Pathology.—Attention has previously been drawn in the *Medical Annual* to experimental investigations which have recently been made in regard to the etiology of syphilis. This work has been actively followed up by observers in Berlin and in Paris, and has proceeded along two main lines.

1. The communication of syphilis to lower animals with the object of studying the life history of the disease under varying conditions, and the observation of the laws which govern immunity from the disease.

2. The search for the germ of syphilis. The successful inoculation of a chimpanzee with syphilis by Metchnikoff and Roux, and a similar result by Lassar, were noted in the *Medical Annual* of last year.

With such certainty of transmission of syphilis to apes it has been possible to push experimental researches still further, and Metchnikoff and Roux[1] record some important observations upon the nature of the syphilitic virus. Two chimpanzees were inoculated with the same syphilitic material, but in one the material had been passed through a Berkefeld filter. The first animal developed syphilis, but that inoculated with filtered syphilitic material showed no signs of the disease. Some idea of the size of the syphilitic virus was thus obtained, for the filter was permeable to minute micro-organisms, such as those of yellow fever, but was impermeable to the larger bacilli of cholera. From the absence of movement in active syphilitic fluid it was concluded that the virus was non-mobile. The power of infection of a suspension of syphilitic material was destroyed after exposure to a temperature of 51° C. for one hour. The addition of glycerin did not destroy the virulence of the material. Experiments were then directed to the production of immunity, but it was found that when the filtered material, or that rendered innocuous by heat, was injected into monkeys, their susceptibility to the syphilitic virus by subsequent inoculation of active material was unchanged.

Attempts to produce a diminution in the virulence of the infection by previous inoculation with very minute doses of the poison failed. Metchnikoff and Roux, therefore, consider that the problem to be solved is to find an animal in which the natural susceptibility and resistance are so nicely balanced as to yield a vaccine sufficiently attenuated to be incapable of producing severe disease in the higher and more susceptible anthropoids, and at the same time sufficiently vigorous to be capable of producing immunity in them.

Infection of a healthy mother through the placental circulation by a syphilitic fœtus or *choc en retour*, as it has been named, has been accepted as a dictum by writers on syphilis. Mazenauer, in 1903,

attacked this principle, and stated his opinion that the mother of a syphilitic infant was herself syphilitic, though she showed no signs of the disease; and that the fœtus was infected through the placenta from the mother. Hereditary transmission through a diseased ovum or spermatozoön was, according to this writer, unproved.

Jesionek, of Munich[2], has recently recorded two cases which bear upon this point. One of these cases may be briefly summarized. A girl of eighteen was admitted to hospital with gonorrhœa, and kept under observation. She was found to be pregnant, and four months after the date of impregnation her general condition rapidly deteriorated. Four weeks later she developed a typical syphilitic roseolous eruption, followed by general enlargement of the lymph glands. Two and a half months later a syphilitic fœtus was born. Jesionek considered it improbable that the advanced syphilitic lesions found in the fœtus could have developed in two and a half months, and thought it probable that the mother was infected by the syphilitic fœtus.

Professor Neumann[3] has recently discussed this subject at some length. From a long series of observations he concludes that the mothers remain free from syphilis in many marriages where the children are syphilitic. In proof of the paternal transmission must be adduced these cases where a woman having given birth to syphilitic children later on produces healthy children by a healthy man. Neumann considers that although the existence of paternal transmission is proved by experience, our ignorance of the nature of the syphilitic virus and its mode of transmission is such that the exact conditions resulting in spermatic or ovular infection cannot be determined. He points to the early and frequent infection of the testicles as a possible source of infection of the spermatic fluid, and refers to the occasional discovery of the bacilli of tubercle and leprosy in the semen as analagous conditions. The transmission of syphilis through the ovum is possible, for in maternal syphilis the ovum may become infected in the ovary, the tubes, or the uterus.

In practice the theory of exclusive maternal transmission would imply treatment of the supposed latent syphilis of the mother, and disregard treatment of the paternal syphilis. According to this any syphilitic man who was not suffering from infective lesions at the time might be allowed to marry, whereas experience showed that it was by thorough treatment of the father that, in most cases, a healthy progeny might be raised.

The question whether syphilis may be transmitted to the third generation without intermediate reinfection is one on which much has been written. There are many pitfalls even in the cases which at first sight appear to be conclusive. Jonathan Hutchinson states that he has never had an opportunity of investigating a case in which he was convinced that syphilis had been transmitted by inheritance to the third generation, and he does not believe that this form of transmission exists. Boeck[4] records four cases in which the evidence

appeals to him as trustworthy. One of these may be quoted. The grandmother was treated in 1854 for secondary syphilis, the mother at the age of two months for congenital syphilis in 1860, while the child was seen by him in 1889 with definite congenital syphilitic lesions. The mother had Hutchinsonian teeth and peri-oral scars, but no signs of secondary syphilis. She had no record of miscarriages or premature births. By her husband she had had, three years before, a perfectly healthy child, and the father showed no signs of disease.

Blaschko[5] discusses a subject which must have a personal interest to all practitioners, namely, syphilis as an occupation disease of physicians. Twelve physicians who had contracted syphilis in the course of their work had come under this writer's care. In nearly all cases the primary sore developed on the fingers. Herpes, anatomical tubercle and chancroid, were the usual diagnostic difficulties. In one case no primary lesion could be found. The two chief sources of infection were punctures with instruments during operations, and unnoticed slight wounds, hang-nails, etc., in gynæcological practice. One case was directly traceable to infection from a syphilitic cadaver. The writer counsels moderation in the use of the nail-brush in cleaning the hands on account of the traumata produced by vigorous scrubbing. The use of rubber gloves in operating and examinations is recommended. Wounds or fissures on the fingers should be touched with 2 to 3 per cent solution of silver nitrate, covered with adhesive plaster, and coated with collodion, or covered with a finger cot. If infection is suspected, thorough washing with water followed by the application of iodine or peroxide of hydrogen is recommended. The electrolytic needle or actual cautery may be employed. An infected physician need not give up his profession, but by observing stringent precautions may continue to practice without danger to his patients.

Although the following notes cover well-trodden ground still they may help diagnosis in a doubtful case, and are, therefore, quoted from an article by Somers[6].

Syphilitic erythema of the throat as a secondary manifestation of the disease may be mistaken for catarrhal pharyngitis or tonsillitis. The erythema is, however, usually symetrical, and its outline is limited by well-defined margins. In colour it is of a deeper brick red or coppery hue than simple erythema, but this is not always sufficiently marked to be characteristic. Small, irregular, semitranslucent areas, or lines, tend to appear, and are due to cloudy swelling of the epithelium. When these areas become larger and present a whitish or bluish-white colour they form a mucous patch. These patches are symmetrical: and the favourite sites are the soft palate, pillars of the fauces, and tonsils. They may also be found in parts exposed to irritation, especially at the sides of the tongue or buccal surface of the cheek. Later, areas of disintegration appear and cover a wide surface, and these show a special tendency to perforate bone.

Treatment. — Duhot[7] recommends the abortive treatment of syphilis by giving the maximum amount of **Mercury**, and continuing

the treatment over as long a period, and with as short intervals as possible. The treatment is commenced before any secondary manifestation has appeared, and intramuscular injections should be the method adopted. Duhot considers 1 cgram. of mercury a day as an efficient dose. Calomel is the most powerful preparation, and should be injected in doses of 10 to 12 cgrams. every eighth day, 10 to 12 injections constituting a course. If calomel is not tolerated, grey oil should be substituted in doses of 15 cgrams. every four or five days so long as the patient can tolerate it, 15 being the minimum and 25 the maximum number of injections. **Salicylate of Mercury** is also efficient, and causes less pain, and less gastro-intestinal disturbance. Doses of 10 cgrams. should be injected every two or three days, and 15 to 25 doses constitute a course. The following time table of treatment should be adopted :—

	First Year.		
1st. course ..	3 months.	1st. rest ..	1½ months.
2nd. course ..	2½ months.	2nd. rest ..	1½ months.
3rd. course ..	2 months.	3rd. rest ..	1½ months.
	Second Year.		
1st. course ..	2 months.	1st. rest ..	2 months.
2nd. course ..	1½ months.	2nd. rest ..	1½ months.
3rd. course ..	1½ months.	3rd. rest ..	1½ months.
4th. course ..	1½ months.		
	Third Year.		
1st. rest ..	2½ months.	1st. course ..	1½ months.
2nd. rest ..	2½ months.	2nd. course ..	1½ months.
3rd. rest ..	2½ months.	3rd. course ..	1½ months.
	Fourth Year.		
1st. rest ..	2½ months.	1st. course ..	1½ months.
2nd. rest ..	2½ months.	2nd. course ..	1½ months.
3rd. rest ..	2½ months.	3rd. course ..	1½ months.

To the objection that such treatment is superfluous in benign cases of syphilis the author replies that there is no benign syphilis. The mildness of the early symptoms gives no guarantee that tertiary symptoms may not develop in the future.

In advocating intramuscular injections of mercury in the treatment of syphilis Ernest Lane[8] mentions that he employs the **Sozoiodolate** and the **Succinimide of Mercury** among the soluble preparations, and **Calomel** when an insoluble form is utilized. These forms of mercury are employed in the following manner :—

℞	Hydrarg. sozoiodolatis	℥ss	Aq. dest.	℥jss
	Sodii iodidi	℥j		

Of this formula ♏xiv contains about ½ gr. of the mercury salt. The succinimide is made up in tabloids containing $\frac{1}{3}$th of a grain, but the dose may be increased to ¼ or $\frac{1}{5}$ of a grain. The calomel preparation is made with vapourized calomel reduced to the finest powder and suspended in sterilized olive oil, ¾ gr. of calomel to ♏xvii of olive oil.

Twenty to thirty injections of the soluble salts constitute an efficient course of treatment. The injections are given at first on alternate

days, then two injections a week, and later one a week. The course may be prolonged over three or four months. A course of six or eight injections of the insoluble salts is sufficient, and a week's interval should elapse between each injection, and later ten days or a fortnight. The intensity of the disease should be a guide to the energy of the treatment, and since the insoluble preparations are far more powerful than the soluble they are specially indicated in the severe and malignant phases of the disease. A rapid saturation with mercury is the best preventive of the tertiary stage. Treatment should extend over eight or nine months in the first year, six months in the second year, and four months in the third. It is difficult to say when the disease is cured, but after treatment extending over three years, and after an absence of symptoms for two years, the surgeon is justified in giving a hopeful prognosis for the future, and in informing the patient that in all probability he will see no further symptoms of his disease. Should the patient wish to marry he should, as a precautionary measure, undergo a further course of treatment before taking that step.

In an interesting article Lieut.-Col. F. J. Lambkin, R.A.M.C., discusses the treatment of syphilis in the Army by intramuscular injections of mercury[9]. Tables are quoted from the Sanitary Report of the Principal Medical Officer, His Majesty's Forces in India, 1904, and from the Army Medical Report for 1903, to show that an improvement in the statistics in regard to syphilis has taken place. He looks upon the more efficient treatment as playing the greater part in bringing about this improvement, and the wide adoption of the intramuscular method of administration of mercury must be given the greatest credit. The alleged dangers attaching to this method have, Col. Lambkin believes, been grossly exaggerated, and he bases his observations upon an experience of over 3,000 cases. Metallic mercury, according to this authority, is the form of choice for intramuscular injections. The mercury is held in suspension in lanolin, and Col. Lambkin recommends the following cream as being that in which the metal is best suspended under varying conditions of heat and cold, etc., and which best retains an equal consistence:—

R Hydrarg.	℥ss	Paraffin. liq. (carbolized 2 per	
Adipis lanæ anhyd.	℥ij	cent.) ad ℥v by volume.	

The finished product equals 1 grain of mercury in x min. Min. x as a maximum dose once a week.

The dispensing of this cream is of great importance. In compounding it the mercury and lanolin should be rubbed up together in small quantities in a glass mortar until every particle of the mercury has disappeared. This trituration will take two hours and is absolutely necessary. When the whole amount has thus been treated the paraffin liq. carbol. is added to it and, these having been well stirred up, the cream is poured into a specially made glass-stoppered bottle. The latter has a very wide mouth to allow of the syringe being filled without again removing the cream. All angles of the bottle are rounded off so as to prevent any chance of the mercury collecting there. The

cream requires no further sterilization, for being already sterile it is kept so by the carbolic acid it contains. Before being used it should be stirred up with a glass rod which has been dipped in boiling olive oil.

In cold weather this cream becomes semi-solid, and is too thick to pass through the needles. This is remedied by placing the bottle in water at a temperature of 90° F. measured by thermometer. In the tropics, when the temperature reaches 90° F., the constituents of the cream tend to separate. This is avoided by keeping the bottle in an ice chest, and allowing the temperature to rise gradually by placing it in crushed ice and stirring before use. These precautions are of the utmost importance.

All-glass syringes with platino-iridium needles should be used. The gluteal region is the best for the injections. The skin is swabbed with a 1 in 500 solution of perchloride of mercury, and the syringe and needle washed with boiling oil before each injection.

The dosage varies with each case, and cannot be indicated by hard and fast rules. In Colonel Lambkin's experience 1 gr. of metallic mercury (i.e., 10 min. of the cream noted above,) a week should be the maximum intra-muscular dose per week in the vast majority of cases.

The author's practice is to give injections of 1 gr. of metallic mercury once a week until all active signs of the disease have subsided. This takes, on an average, from six weeks to two months. Then the number of injections is reduced to once a fortnight for three months. A rest from mercurial treatment is given for two months, then a three months' course of fortnightly injections is given, followed by a two months' rest from treatment. This finishes the first year. The patient is now kept under observation, and should he show any signs of relapse further courses of three months' treatment, followed by the same period of rest, are given. The patient is kept under observation until he has been twelve months free from symptoms after the last course of injections. The average period of treatment and repose necessary is about two years.

Col. Lambkin also gives the following formulæ and criticisms :—

℞	Hydrarg. perchlor.	gr. 32	Aq.	℥j
	Amm. chloridi	gr. 12		

Min. x as an injection every third day.

The perchloride is slow and unreliable in action, and causes pain and irritation at the seat of injection.

℞	Sozoiodol hydrarg.	gr. v	Aq.	℥ 200
	Sod. iodid.	gr. x		

Min. 10 to 15 as an injection.

The same objections apply to this preparation. The chief objection to these and other soluble salts of mercury are the frequent injections necessary (three or four times a week). They are also painful, and

their action is slow and unreliable. Their action can, however, be better controlled than in the case of the insoluble salts.

℞ Calomelainos gr. 10 | Paraffin liq. (carbol. 2 per cent) ℥½
Min. 10 injected once a week.

Calomel is very active, and reaction follows sooner than after any other salt of mercury. On the other hand, it is intensely painful, and is apt to cause local irritation. The author looks upon it as a heroic measure, to be reserved for cases in which it is desired to strike quickly and hard, such as those showing signs of cerebral or spinal disease.

℞ Hydrarg. salicyl. 2 parts | Ol. amygdal. 20 parts

This salt is extensively used in Germany and Austria. Cocaine is added to prevent pain. Col. Lambkin looks upon it as less active and less rapid in action than either calomel or metallic mercury.

Risso and Cipollina[10] have published the results of their observations on a series of cases of syphilis treated by the injection of **Antisyphilitic Serum.** The serum was obtained by injecting the blood of syphilitics into the subcutaneous tissue of dogs. All the elements of the blood were injected, as it was feared that by using the blood serum only the virulent material might be lost.

Twenty-one patients in all were submitted to the treatment. Eight of these patients were under observation for a considerable period. Five were in the secondary stage, and of these, three were cured, and showed no signs of relapse; two showed partial relapses; and one, after showing some improvement at first, gained no benefit from the treatment. Mercury was afterwards administered in the last case, and was said to be equally ineffectual. One tertiary case was cured; but another, after losing his symptoms, disappeared, and could not be traced. The remaining thirteen recent cases gave encouraging results. Injections of small quantities of the serum spread over long periods gave better results than the more frequent use of larger quantities.

In reviewing their results the authors hold that their serum has a specific action in syphilis. At the same time they do not deny that this may only be a stimulation of the resisting powers of the individual. In answering the criticism that no specific serum can be obtained from animals since they are not susceptible to syphilitic infection the authors point to the analogy of the anti-tetanic serum obtained from hens, which are refractory to tetanus.

Pinard[11] discusses the prophylaxis of hereditary syphilis, and expresses his view that while it is not very difficult to avoid the infection of a wife by suitable treatment, it is much less easy to guarantee the progeny against syphilis. This author supports the statement of Fournier that the birth of one or even several healthy children gives no certainty that the father is cured of his syphilis, for hereditary syphilis may appear in a child whose elder brothers or sisters are free from the taint. Pinard believes that a syphilitic husband who desires to beget healthy children must submit to antisyphilitic treatment, even

when all symptoms of the disease have been long absent. He keeps his patient under mercury and iodides for six months, and when the wife conceives submits her to the same treatment during the pregnancy. This treatment of the man and wife is continued during the period of child bearing.

References.—[1]*Ann. de l'Inst. Pasteur*, Nov., 1904 ; [2]*Münch. Med. Woch.*, Nos. 48, 50, 1904, *Lancet*, Feb. 4, 1905 ; [3]*Wien. klin. Woch.*, May 19, 1904, *Brit. Med. Jour.*, Aug. 27, 1905 ; [4]*Berl. klin. Woch*, 1904, S. 968, *Amer. Jour. Med. Sc.*, April 1905 ; [5]*Berl., klin. Woch.*, Dec. 26, 1904 ; [6]*Med. News*, March 12, 1904 ; [7]*Ann. d. l. Policl. cent. de Brux. Practitioner*, Aug, 1905 ; [8]*Polyclinic*, Nov., 1904 ; [9]*Brit. Med. Jour.*, Nov. 11, 1905 ; [10]*Rif. Med.*, Nov. 30, 1904, March 18, 1905, *Brit Med. Jour.*, Feb. 4, May 15, 1905 ; [11]*Ann. de Gynéc. et d'Obstet.*, April, 1905, p. 201, *Brit. Med. Jour.*, June 10, 1905.

SYPHILIS (Congenital). *G. F. Still, M.D.*

Etiology.—The various modes of transmission of syphilis to the offspring have been considered by the present writer[1]. They are classified according as symptoms of syphilis are present in one parent or in both, and may be arranged in order of frequency thus : (1) Father syphilitic, mother healthy ; (2) Father and mother syphilitic ; (3) Mother syphilitic, father healthy ; and (4) Mother acquired syphilis during pregnancy. In the last case the disease in the infant is perhaps specially severe, but otherwise the severity of the transmitted disease hardly seems to be affected by the mode of transmission. No doubt the stage of the disease in the parents modifies the disease somewhat in the child, but the severity of the disease in the child does not always diminish in later pregnancies, for the disease may be absent in one child and reappear in the next, and cases are recorded in which one of a twin showed severe manifestations of syphilis while its fellow showed none. Fournier[2] considers that parents with congenital syphilis may transmit syphilis to their children, and relates that out of 116 families in which one or both parents had congenital syphilis, 192 children survived the first year, and 28 of these showed evidence of syphilis.

Nothing certain is yet known of the specific virus of syphilis. Various observers have described a spirillum, the spirochæta pallida, which has been found in some of the specific lesions of acquired syphilis, but Levaditi[3] has recently found this same micro-organism in the vesicles of hereditary syphilitic pemphigus, and in the spleen and liver of syphilitic infants.

Symptoms.—The present writer (loc. cit.) states that symptoms are present at birth, probably much oftener than is usually supposed. Thus pemphigus, snuffles, eye-changes, particularly choroido-retinitis, and enlargement of liver and spleen, are all occasionally present in the new-born infant : the thick crop of dark hair which is a notable feature in some cases of syphilis may be present at birth ; and the severe hæmorrhages, which some writers have called syphilis hæmorrhagica neonatorum, are also present very early. These the present writer believes to be very rare. Wilson[4] states that amongst 3,364 children born in the Philadelphia Lying-in Charity, there were 45 instances of hæmorrhage, most of which were fatal ; in 10 out of

these 45 cases there was evidence of syphilis, either in the parents or in the child. In some of the 10 cases the hæmorrhage was present at birth, and the infant was still-born. The commoner symptoms of congenital syphilis are marasmus, which in its gravest form generally begins within a few days after birth; snuffles, which occur usually within the first six weeks; skin eruptions, which are generally characteristic, and almost always appear within the first three months; and enlargement of the spleen, which the present writer found to be easily palpable in 45 per cent of the cases. Less common affections are fundus changes, iritis or choroiditis; laryngitis, which was noted in 14 per cent; epiphysitis, orchitis, and various brain disorders, such as cortical sclerosis, hydrocephalus, cerebral palsies, and idiocy, one or other of which is present in about 10 per cent. Herrman[5] points out that syphilitic pseudo-paralysis usually affects the upper limb, not the lower, and states that this is supposed to be owing to the attachment of tendons of important muscles near the epiphyses in the upper extremity, which is not the case in the lower. Marfan[6] records a case of congenital stridor in an infant who died at the age of 15 months, and was found to have a large thymus. Marfan suggests that the hypertrophy of the thymus was in compensation for defective function of the spleen, which was found to be gummatous. A rare condition of pulmonary syphilis in a girl aged 13 years, is described by Zuber[7], namely, a gummatous infiltration of the right lower lobe, which simulated tubercular disease.

Whether congenital syphilis is contagious or not can now hardly be considered open to question: undoubted instances are on record, where, for instance, a wet-nurse has been infected; but the present writer (loc. cit.) has confirmed the observations of Coutts as to the extreme rarity of contagion from inherited syphilis.

Treatment.—The importance of *breast-feeding*, in view of the tendency of syphilitic infants to marasmus, can hardly be overestimated but it must be the mother, not a wet-nurse, who suckles, for the mother, in accordance with Colles' law, is immune from contagion, even though she may have shown no evidence of the disease in herself. It must be understood, however, that this applies only to inherited syphilis, not to the very rare condition of acquired syphilis in the infant, which would seem to be virulently contagious.

As to drugs, the present writer considers that none is more generally useful for infants than **Grey Powder**, of which $\frac{1}{2}$ a grain three times a day may be sufficient. The **Liquor Hydrargyri Perchloridi** in doses of 3 to 10 minims three times a day is also useful, but seems to be more liable to cause diarrhœa. If **Unguentum Hydrargyri** is used, 15 grains, a piece roughly the size of an average green pea, should be rubbed into the skin each night, covered with flannel, and left on until the morning; this should be done each night. Chassagne[8] recommends the **Intramuscular Injection of Biniodide of Mercury**, of which $\frac{1}{200}$ to $\frac{1}{30}$th grain in aqueous solution is injected at each administration: after each course of 10 injections spread over several days, a rest of a few

days is given, after which the infant undergoes another series of injections, and so on until there are no appreciable symptoms of the disease. The present writer has pointed out that even in the most severe cases an infant can be brought under the influence of mercury very rapidly by inunction combined with oral administration, and that, therefore, there is no necessity for adopting such a painful method of treatment as intramuscular injection. As to the duration of treatment it must certainly extend beyond the time of disappearance of symptoms of syphilis if their recurrence is to be prevented; probably, the administration of mercury should continue at least six months after the disappearance of active symptoms of syphilis.

References.—[1]*Lancet*, Nov. 1904; [2]*Clin. Inf.* Oct. 1904; [3]*Presse Méd.* 1905, p. 337; [4]*Arch. Ped.* Jan. 1905; [5]*Ibid.* April, 1905, p. 292; [6]*Ann. Méd. et. Chir. Inf.* Feb. 1, 1905; [7]*Ibid.* May 15, 1905, p. 334; [8]*Thèse de Paris*, 1904.

TACHYCARDIA (Paroxysmal). (*See* Pulse and Blood Pressure.)

TETANUS. *Purves Stewart, M.D.*

In last year's *Medical Annual* our present means of coping with this appalling disease were discussed, and we pointed out the importance, not only of local disinfection of the wound, but also of prompt administration of antitoxin, preferably injecting it directly into the spinal subarachnoid space, through a lumbar puncture cannula. But in spite of this treatment, the mortality from tetanus still remains a high one, many patients succumbing to exhaustion or to spasm of the respiratory muscles, before the antitoxin has been able to exercise its remedial effect. Conolly and Cullen[1], therefore, in a severe case, supplemented the administration of tetanus antitoxin by administering hypodermically **Curare** in progressively increasing doses, from $\frac{1}{12}$ gr. up to a maximum of $2\frac{1}{2}$ grs. No definite amelioration in the spasms was observed with doses less than $\frac{1}{6}$ gr., and for eight successive days the sufferer had 1 grain of curare every twenty-four hours. Their patient, whose tetanus had appeared seven days after infection, ultimately recovered completely. No ill-effects on the heart were observed after the curare injection, and the relief to muscular rigidity and to the respiration was very marked.

Collins[2] also records another successful case treated in a similar fashion by antitetanic serum and curare. The case was a severe one, in which the symptoms appeared eight days after infection. The dose of curare commenced with $\frac{1}{12}$ gr., and the maximum dose reached was 1 gr. per diem. The patient recovered.

The treatment of tetanus by the induction of **Spinal Anæsthesia** was originally suggested by Corning[3] twenty years ago. He pointed out how the application of cocaine to the posterior roots was able to control convulsions produced by strychnia poisoning. More recently Russell[4] has called attention to the treatment not only of strychnia poisoning but also of tetanus, by means of spinal anæsthesia. The convulsions both of strychnism and of tetanus, as Sherrington[5] points

out, are largely due to hyperexcitability, not merely of the anterior cornual cells but of the sensory afferent limb of the reflex arc, running in the posterior roots. In strychnism and tetanus, instead of a normal reflex, whereby one group of muscles is stimulated and their antagonists inhibited, there is an actual excitation of the antagonists, so that when the patient tries to execute certain acts, the contrary result is produced. Thus the attempt to swallow produces spasmodic closure of the jaw, and every effort on the part of the sufferer to relax muscle-groups serves only to heighten their excitation.

Application of a solution of **Cocaine,** (or better, **Eucaine** β, which can be boiled without impairing its potency), to the posterior spinal roots can relax the spasms of strychnia poisoning, so that, instead of the slightest sensory stimuli inducing a convulsion, even strong stimuli now fail to produce any spasm. Russell recommends the administration of a 3 per cent solution of eucaine β, 1 c.c. of this containing practically $\frac{1}{2}$ a grain of the drug. Treatment on these lines is successful in animals, and there seems no reason why it should not also be equally satisfactory in man. It may be necessary to anæsthetize first with chloroform, to permit of the lumbar puncture needle being inserted.

Murphy[6] in this connection records a case of tetanus successfully treated by repeated withdrawal of cerebrospinal fluid and injection of 3 c.c. of the following solution: Eucaine β $1\frac{1}{2}$ grs., morphine sulphate $\frac{1}{3}$ gr., sodium chloride 3 grs., and water to $3\frac{1}{2}$ ounces. Each dose would thus contain about $\frac{1}{160}$ gr. of morphine and $\frac{1}{12}$ grain of eucaine β. The immediate result was that the spasms relaxed, and the boy slept for several hours. In all, five injections were made within nine days. The patient recovered. Antitetanic serum was also administered at the start, (by which route is not stated in the abstract).

We should, therefore, bear in mind, that whilst antitetanic serum attacks the tetanus toxin itself, yet the intrathecal administration of eucaine in addition, by anæsthetizing the posterior roots, may serve to relax the paroxysms at the moment. It will, therefore, be an important accessory in the treatment of this distressing and dangerous disease.

References.—[1]*Lancet*, Sept. 17, 1904; [2]*Ibid*, April 15, 1905; [3]*New York Med Jour.* 1885, p. 483; [4]*Lancet*, Sept. 23, 1905; [5]*Proc. Roy. Soc.*, vol. lxxvi, No. B. 509, p. 269; [6]*Jour. Amer. Med. Assoc.* Aug. 13, 1904.

TICK FEVER (Human). *J. W. W. Stephens, M.D.*

Dutton and Todd[1] discovered on Nov. 26th, 1904, independently of Ross and Milne: (1) That a spirochæte was the specific agent in the causation of human tick fever in the Congo Free State; (2) That the spirochæte was conveyed by the bite of a tick, *Ornithodorus moubata*, and that young ticks (nymphs) could also convey the disease.

Incubation Period.—This does not exceed one week.

Symptoms.—Frontal headache, bone-ache, backache, vomiting, and generally diarrhœa. The temperature rises to 104 to 105°. Between the febrile attacks, which last 3 to 4 days, there is an afebrile interval

of 5 to 19 days. During the attacks the prostration and feeling of depression is intense.

The spirochæte.—Spirochætes vary from 13 μ to 40 μ. Whether identical or not with *S. obermeieri* remains to be seen. They stain with any aniline stain, but Schaudinn's stain used by him for staining *S. pallida* (of syphilis) should be used for studying details.

Spirillar fever is recorded from Palestine by Cropper[2], and from Angola, West Africa, by Wellmann[3]. The native name for the tick (*O. moubata?*) in Angola is Ocihopio.

Ornithodorus moubata (Murray).—Dutton and Todd[3] say that this tick in the Congo is met with particularly along the main routes of travel. They abound in rest houses, in the dust and cracks of mud floors, and especially near the fireplace; in bedding, in thatch, in grass walls, etc. Human beings are generally attacked at night or during sleep.

Dutton and Todd[4], in a more complete report of their work, present additional facts about tick fever and the bionomics of the tick. The mortality is as a rule not great, but under adverse circumstances may be as high as 50 per cent. Young monkeys (*Cercopithecus sp.*) seem to be the only laboratory animals to which the spirochæte is pathogenic.

Microscopical Examination.—If numerous the spirochætes are easily seen in fresh preparations as somewhat rapidly moving spiral threads. It is best to examine stained specimens. Make a smear of blood on the slide as big as a sixpence. Dry thoroughly. Do not fix. Stain with gentian violet (a few drops of saturated alcoholic solution to half a watch-glass full of water), or carbol fuchsin (1 part to 10 of water), Romanowsky, etc. The red cells are in this way washed out. The leucocytes, spirochætes, etc. remain.

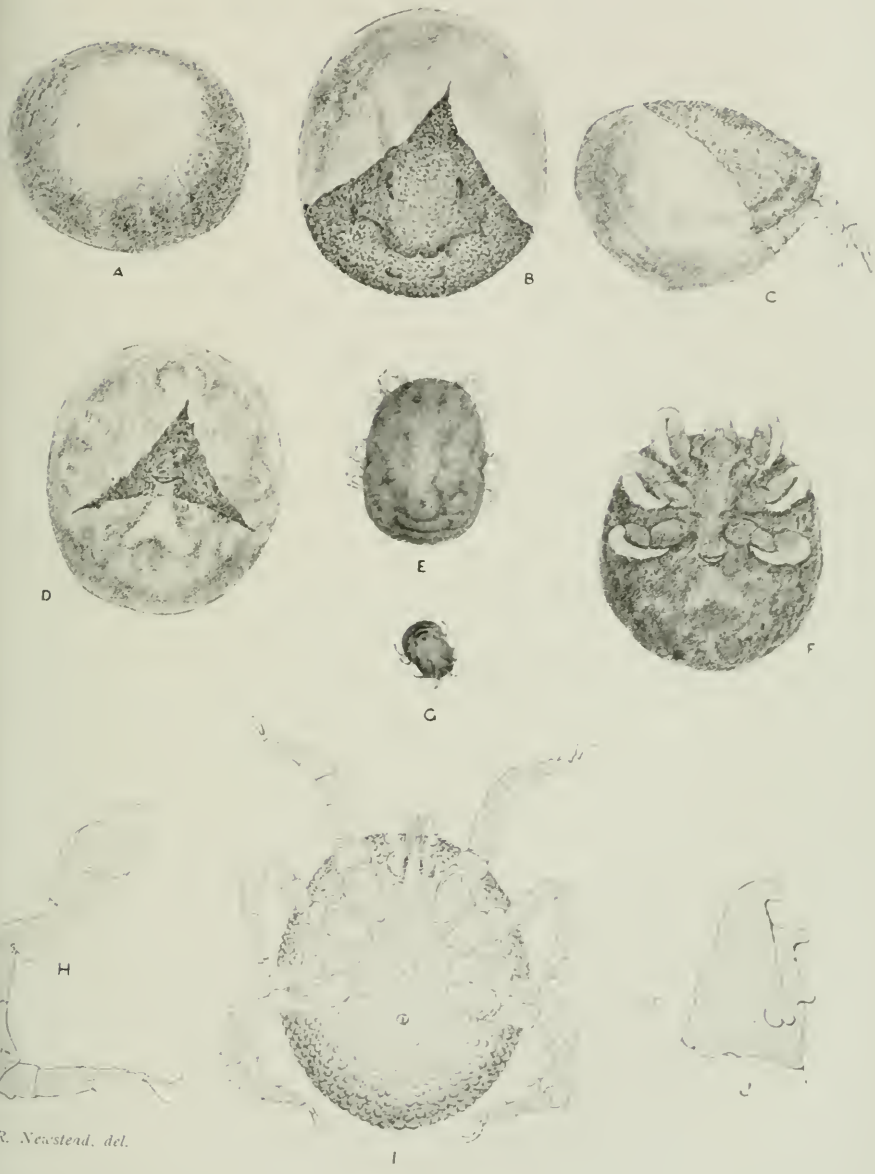
Ornithodorus moubata (Murray)[5].—The female (*Figs.* E *and* G, *Plate XXVII*) is of a dark brownish colour, sometimes irregularly blotched with dusky orange spots or bands, the extent of these depending on the state of distension of the tick. The sulci of the dorsum are constant, but vary in depth; in the unfed tick they are very deep (*Fig.* E), in the engorged female shallow (*Fig.* I), and especially so are the subdorsal and sub-marginal grooves. Mainly characteristic of the species is: (1) The absence of eyes on the supracoxal fold; and (2) The presence on the mandibles of an inner bidentate apophysis (*Fig.* J). These characters distinguish it from *O. savignyi*. The male is much smaller than the female.

Nymph (*Fig.* I): Pale brown in colour, dorsum has numerous papillæ; posteriorly they form a crenulated marginal fringe. Legs sparsely spinose. Leg i of seven segments, with Haller's organ present. Legs ii to iv of eight segments (*Fig.* H). Vaginal orifice absent.

Larva (*Fig.* F): Dull purplish brown in colour. At the period of ecdysis, posterior to the anal orifice, is a large Y-shaped white patch of secretion (*Figs.* D *and* F). Hypostome with two broad bilateral angular teeth on the anterior third. The larva is remarkable in that it passes its whole life within the egg.

PLATE XXVII.

TICK-FEVER IN MAN



R. Newstead, del.

Ovum (*Fig.* A): Translucent and resembling glue in colour, with a subcutaneous polygonal reticulation.

EXPLANATION OF PLATE XXVII.

Ornithodorus moubata (Murray).

Fig. A.—Egg. First day. × circa 40.
Fig. B.—Egg at about the tenth day, with the posterior portion of cuticle broken away (dorsal). × circa 40.
Fig. C.—A similar example seen in profile. × circa 40.
Fig. D.—Egg at about the eighth day, showing the split cuticle, the sub-lying larva, and the "arrow-shaped" subcutaneous patch of secretion (ventral). × circa 40.
Fig. E.—Adult female, partly engorged. × 3.
Fig. F.—Larva removed from the egg (ventral). × circa 40.
Fig. G.—Adult female, natural size.
Fig. H.—Leg iv of the nymph. × 50.
Fig. I.—Nymph (as seen in optical section after maceration in potash). × 25.
Fig. J.—Mandible of adult female, *ap.* inner bidentate apophyses. × 250.

REFERENCES.—[1]*Brit. Med. Jour.* 1905, p. 1259; [2]*Ibid*, July 15, 1905; [3]*Amer. Med.* July 22, 1905; [4]*Memoir* xvii, *Liv. School of Trop. Med*; [5]*Newstead, Ibid*, p. 21.

TONGUE (Cancer of). *Priestley Leech, M.D., F.R.C.S.*

Butlin[1] gave a lecture (which ought to be read by every surgeon) on removal of the contents of the neck, in cases of malignant disease of the tongue. He divides the lymphatic glands into the following groups: submental; submaxillary, for the most part *beneath* or *embedded* in the salivary glands, and one gland lies in the subcutaneous tissue, over the submaxillary gland, and may be drawn up with it; the inferior carotid group, and there is one just on the bifurcation of the common carotid; and the superior carotid group, which Butlin calls the parotid group, and this lies deep down behind the angle of the jaw, rather more behind the vessels than in front, between the vessels and the parotid gland, and in order to remove it properly, it is almost always necessary to cut away a portion of the parotid salivary gland itself. The gland at the bifurcation of the parotid is usually the one to be first felt, as it lies more superficially than the others. All the groups of glands may become affected by an ulcer or growth in any one part of the tongue, and to be on the safe side, and as far as possible to prevent recurrence, all the glands must be removed.

The operation Butlin does is shown in *Figs.* 64 to 67, and is as follows: A long incision is made from the mastoid process, or just below it, to the sternoclavicular joint, along the anterior border of the sternomastoid muscle. Another incision is then carried from the symphysis menti across the side of the neck to meet the first incision about the upper border of the thyroid cartilage; it is nearly at right angles to the first incision (*Fig.* 64). Two large triangular flaps are thus formed, and these flaps should be of skin alone or very little more than skin,

because, in addition to the gland over the submaxillary salivary gland, there is another gland in the submental region which also lies in the subcutaneous fat (*Fig.* 65). The dissection is begun at its lowest part (*Fig.* 66) and the sternocleidomastoid is drawn a little back. Its border is cleaned so that the muscle is bare. The dissection is carried down in front of it until the great vessels are exposed. The tissues between the sternomastoid and the muscles attached to the larynx, which contain a long chain of glands, are raised from below upwards off the great vessels, which are left quite bare at the bottom of the wound. The muscles are cleaned of fascia and fat: the dissection is carried up along the line of the vessels and quite close to the vessels themselves; otherwise glands will be left behind. It is carried deep down around the vessels in front and behind, particularly between

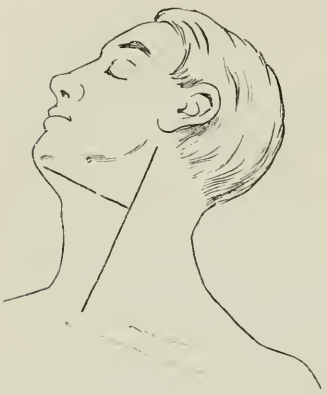


Fig. 64.

Fig. 65.

the parotid glands and the vessels. The digastric triangle is completely cleared out, including the submaxillary salivary gland, and the muscles are left quite bare (*Fig.* 67). The submental region is treated in like manner, and search is made between the geniohyoid muscles lest a gland should be overlooked.

A very clean dissection can be made in about one hour and twenty minutes to one hour and three-quarters. The internal jugular vein and the carotid arteries are exposed for many inches of their course. A considerable number of vessels must be tied, and he advises the surgeon most strongly to take up, and clamp and tie every vessel he possibly can before he divides it, as this saves any great blood loss. The wound is cleansed, and a strip of gauze is thrust up beneath the jaw in the submaxillary triangle, and another is placed between the parotid gland and the vessels; both strips are brought out at the lower end of the wound: these two strips check oozing, and are removed the day following the operation. A drainage tube is also inserted by the side of the gauze to carry off the serum and the saliva,

as the parotid gland is almost invariably wounded. Portions of the internal jugular vein and external carotid artery may have to be removed.

As to when this operation should be done, Butlin first removes the tongue, and nine days later clears out the anterior triangle, and he thinks this should be the routine course, except in special cases. He thinks the submaxillary salivary gland should always be removed. At present he does not think the circumstances warrant removal of the glands on both sides of the neck in cancer of the tongue, though he has had a case where the patient died from diseased glands on the opposite side, after removal of the tongue and the glands on the same side. If there is severe glandular disease in the parotid region and

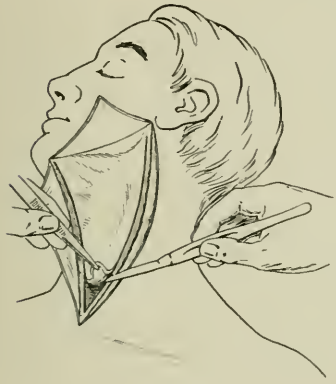


Fig. 66.

Fig. 67

beneath the sternomastoid, he thinks the contents of the posterior triangle should be removed down to the brachial plexus. Where the disease is in the middle line of the tongue, or has crossed over, the contents of both triangles must be removed, and the cases often do well.

REFERENCE.—[1]*Brit. Med. Jour.* Feb. 11, 1905.

TONSIL (Diseases of). *P. Watson Williams, M.D.*

Peritonsillar Abscess or Quinsy.—It is superfluous to discuss the symptoms of peritonsillar abscess; every practitioner of medicine encounters these cases, but probably all have felt the difficulties that stand in the way of relieving the patient's sufferings by early evacuation of the pus. St. Clair Thomson[1] has devised a safe method of overcoming these difficulties, which is worthy of extended trial. We quote his description of the conditions and his method of operating as follows :—

The usual sequence of events in this disease is somewhat as follows : Attempts at relieving the pent-up pus are willingly postponed both

by patient and practitioner; as long as possible by the former, to escape increased and possibly useless pain, and by the latter to avoid adding to previous failures. Finally, towards the seventh day or later, the patient begins to get worn out, the medical attendant thinks he will surely find that "matter has formed" and hopes that he may be more fortunate this time in striking it. Armed with a narrow, sharp-pointed knife, and with a vivid mental picture before him of the proximity of the carotid artery, he has much difficulty in securing any but the most restricted view of the field of operation. If successful in seeing the tonsillar region, he probably thinks it best to thrust the knife into the most inflamed and prominent part which presents, though for choice he prefers to insert it into the tonsil itself, as safer and offering more chance of reaching a "tonsillar abscess." If no pus appears, and the patient is sufficiently tolerant, he may make two or three more stabs into the tonsil, and the failure to find pus is glossed over by the encouraging statement that the bleeding will do good. This is a wiser comfort than the assertion that the abscess is not "ripe," for at the next visit one may be met with the disconcerting announcement that it "burst in the night." Thomson considers that the uncertainty of relieving a quinsy is due to a want of appreciation of its usual location (*see Fig. 68*), and that the anxiety connected with opening the purulent collection can be entirely avoided by not using a knife and by adopting a safe and equally effective instrument, such as Liston's dressing forceps with a sharp end.

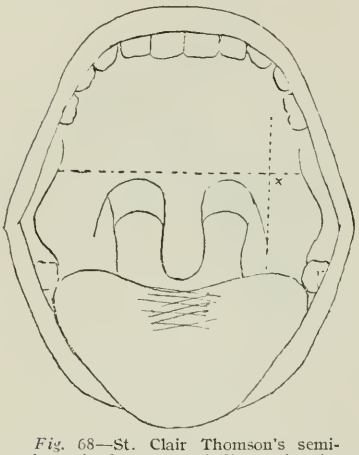


Fig. 68—St. Clair Thomson's semi-schematic drawing to indicate the site for opening a peritonsillar abscess.

Tonsillitis.—Vincent's Angina occurs more commonly than is generally recognized, and probably a goodly number of cases are diagnosed as simple tonsillitis or as diphtheria. Prof. Vincent[2], the original discoverer, states that the affection occurs at all ages, but is especially frequent in children between the age of eight or ten years, and in adults from eighteen to thirty years of age. He finds that the patients form 2·26 per cent of all angina cases in adults. It occurs in every country and in all climates, but is particularly prone to affect those who smoke and drink to excess or who have carious teeth. Its occurrence bears a more or less definite relationship to dentition, and to ulcero-membranous stomatitis, which Vincent has demonstrated is due to the same micro-organism. Thus the anginal form generally manifests itself in connection with second dentition or the cutting of wisdom teeth, and particularly in badly nourished or anæmic patients,

the syphilitic or tuberculous, or those living in badly ventilated dwellings. The affection is communicable either by common use of pipes, cups, etc., or by intimate contact with the infected.

The micro-organisms causing the disease are the fusiform bacillus and the spirillum, and though these are always associated with saprophytic organisms, they are almost invariably both present in large numbers; in a few cases the spirillum has not been present.

Clinically two forms are recognizable:—

1. The ulcero-membranous variety, by far the most common and the most important. It is brought about by the association of the fusiform bacillus and the spirillum. Ushered in by malaise, headache and fever, together with redness of the fauces and enlargement of the tonsils, lasting two or three days, deglutition becomes painful, the breath fœtid, tongue coated, and the submaxillary glands swollen. It may subside in 8 or 10 days, or may persist and become chronic. In some instances extensive ulceration of the tonsils, fauces and palate has occurred. Scarlatiniform erythema and rheumatic pains, and even albuminuria, myocarditis, and endocarditis, have been noted as due to the disease, or rather to associated streptococcal or other infective organisms. The pharynx is soon the seat of grey or yellowish false membrane, soft, slightly adherent, with subjacent ulcerated membrane, generally in the tonsil, which is soft and friable and easily removed.

2. The diphtheroid variety is very rare, Vincent meeting it in only 2 per cent of his cases. It is due to the fusiform bacillus without the spirillum, though associated with streptococcal and staphylococcal infections. A patch of false membrane appears and enlarges, resting on the red and inflamed mucous membrane. The membrane may attain a diameter of 1 to 2 cms. and is consistent. On removal the underlying surface is found to be ulcerated or bleeding. Dysphagia and fœtid breath, swelling of submaxillary glands, and slight fever persist for a few days, and the whole duration of the illness is from 4 to 8 days.

References.—[1]*Brit. Med. Jour.* Mar. 25, 1905; [2]*Lancet*, May 13, 1905.

TOPHI (Diagnosis of). *Robt. Hutchison, M.D.*

Strangely enough, according to Wilhelm Ebstein[1], there is no very accurate description in the text-books of tophi in the ear. The question is, under what circumstances one is justified in considering a nodule in the ear as referable to the group of tophi, and therefore, proof of the existence of gout. The best description is that given by Garrod who says tophi are sometimes single, sometimes numerous, sometimes smaller than a pin head, sometimes larger than a split pea. They generally have the appearance of pearls, and lie on the borders of the helix. As regards consistency, they are sometimes hard and sandy, but frequently soft, and yield a milky juice on puncture. As to their significance, they are regarded as the exclusive property of the gouty. Duckworth has found them in one-third of his cases (49 out of 150), and as their appearance frequently precedes the arthritic manifestations

of gout, their presence has acquired a diagnostic value that can hardly be over-estimated.

In the course of the preceding year Ebstein has seen, in three cases, formations in the ears which resemble in many ways, and therefore require differentiation from, true gouty tophi, from which they are separated by the following characters: First, their seat is neither in the cuticle nor in the subcutaneous connective tissue, but in the cartilaginous tissue itself; and, secondly, no uratic contents can be obtained from them. The first of the cases was that of a man, with gradually increasing joint pains, and old tuberculous lesions at the apices, who presented on the antihelix sharply bounded, hemispherical elevations, 4 mm. in diameter, with a hard feel, which yielded on puncture no fluid, the tumour being solid. The left knee-joint was 3 centimetres larger in circumference than the right, and the patellar bursa contained fluid which was drawn three times but never contained uric acid or urates. In the second case, a man of thirty-two, the helix and antihelix, tragus and antitragus, exhibited a series of prominences which, on puncture, yielded fluid not containing uric acid or urates. The mother was under treatment for chronic gouty arthritis. The third case was one of typical uratic gout, without typical tophi anywhere; prominences of cartilaginous consistence were present in the ear cartilage itself. These observations show that in rheumatic and goutily-burdened individuals, tophi-like nodules may be present in the ears which do not correspond to the gouty deposits frequently occurring there, but lying in the cartilages themselves. They appear to be generally of firm consistence, not deviating from that of the cartilage. Whether they bear a relation, and if so what relation, to rheumatism and gout, is an open question. But in no case should one make a diagnosis of tophi, and therefrom of the presence of gout, unless he obtains uratic contents from the ear tumours.

Reference.—[1]Abstr. in *Med. Rec.* July 2, 1904.

TRYPANOSOMIASIS. *J. W. W. Stephens, M.D.*

Thomas and Breinl[1], in a report too lengthy for analysis, come to the conclusion that the trypanosomes of sleeping sickness from various localities and of various strains of trypanosome fever are identical, viz., *T. gambiense.*

Treatment.—The only drugs of any value are **Arsenic** and an **Aniline Dye** called by Ehrlich "trypan red." The arsenic compound used was a meta-arsenic aniline compound called "atoxyl." Its great advantages are: (1) That it is less toxic than other arsenic compounds; (2) That it does not cause sloughing at the seat of injection. A combined treatment is the best mode of administration. The dose of atoxyl is said to be 5 c.c. of a 5 per cent watery solution of atoxyl. It is best given intravenously, or, if not, subcutaneously. The effect should be carefully observed. The dose of trypan red is about 5 grains. The treatment must be a protracted one.

Pathology.—(1) There is a small-celled infiltration around the

vessels of brain and spinal cord, especially remarkable for the presence of plasma cells; (2) Hæmorrhagic lymph glands. All stages between normal and hæmo-lymph glands can be found; (3) Necrotic areas occur in the spleen in human and animal cases; (4) The bone marrow is always degenerated.

The changes produced in animals by various trypanosomes are similar to these, and the authors conclude that the lesions present in sleeping sickness are caused by the trypanosomes.

Dutton and Todd[2], with regard to the value of gland puncture in the diagnosis of sleeping sickness, conclude: (1) That it is a very efficient but not infallible means of detecting the presence of trypanosomes. (2) Owing to its simplicity it will be a very useful routine diagnostic method.

Greig and Gray[3], in reference to the question of gland puncture, conclude that "every case of sleeping sickness has enlarged glands, e.g., the femoral, inguinal, or superficial cervical, that the recognition of sleeping sickness in its earliest stages (trypanosome fever) will be a matter of easy accomplishment." The diagnosis should be confirmed by puncture of the gland, especially the posterior cervical, by means of a hypodermic syringe. With regard to the connection between sleeping sickness and trypanosomiasis they conclude: (1) That the essential features of trypanosome fever are also found in sleeping sickness. In both there is a polyadenitis, in both *T. gambiense* is found; (2) The onset of the last stage of sleeping sickness is coincident with a marked development of trypanosomes in the cerebrospinal system; (3) Cases of trypanosome fever terminate as: (*a*) sleeping sickness, the usual way; (*b*) by intercurrent infections, e.g., pneumonia; (*c*) a few remain well for long periods and possibly recover; (4) The result on animals is the same whether infected by trypanosomes from sleeping sickness or from cases of trypanosome fever.

With regard to the diplostreptococcus which is not uncommonly found post mortem, the authors show that it only invades the system in the very last stages of the disease, therefore does not determine the onset of this stage.

The *post-mortem* changes in sleeping sickness are; (1) General glandular enlargement; (2) Increase in sub-arachnoid fluid, giving the pia-arachnoid a dull, ground-glass appearance, some flattening of the convolutions, and infection of the superficial vessels; (3) The ventricles of the brain may be dilated, filled with fluid, and the substance of the brain may show points of congestion; (4) Minute hæmorrhagic areas in the stomach are not a constant feature, as they were absent in Thomas's and Breinl's cases.

Tsetse Flies.—Glossina palpalis is, so to speak, the normal transmitter of sleeping sickness, but other species can also convey the disease, though it is not yet determined which these are. *Gl. palpalis* can also convey other trypanosomes besides *T. gambiense*. *Stomoxys. sp.* cannot convey any of these trypanosomes of Uganda.

Neave[4] has treated a case of human trypanosomiasis with apparently

successful result with **Chrysoidin.** The drug is injected hypodermically, commencing with $\frac{3}{20}$ of 1 grain, and gradually increasing up to $\frac{1}{2}$ a grain.

Koch[5] considers that the " Tsetse " disease (? Ngana) is transmitted by *Gl. fusca* mainly, also by *Gl. morsitans* and *Gl. pallidipes.* Koch finds evidence of a developmental cycle in trypanosomes taking place in the *stomach* of the fly. Male and females develop. The female trypanosome is thick and plump, staining a deep blue, and has a fairly large, round chromatin body (nucleus) of loose texture. The male trypanosome is very slender, has no blue-stained protoplasm, but a long slender compact chromatin mass. Whether fertilization now takes place has not been determined, but large forms are found in the posterior portion of the stomach which are taken to be fertilized females. They have two, generally four, but sometimes eight nuclei, with only one blepharoplast and flagellum. From these it is thought, though the process has not been completely followed, that the youngest forms arise. These forms, frequently seen in infected flies, are at first spherical cells with a nucleus only, then from these all transitions can be traced up to the ordinary forms with nucleus, blepharoplast, and flagellum. Other curious forms are also found in the fly. The female glossina lays, not an egg, but a single white larva which pupates in a few hours. *Gl. fusca* lays larvæ only at intervals of 10 to 20 days.

REFERENCES.—[1]*Liv. School of Trop. Med.* Memoir xv.; [2]*Ibid,* p. 97 [3]*Reports of the Sleeping Sickness Commission of the Royal Society,* No. vi [4]*Lancet,* June 17, 1905; [5]*Deut. Med. Woch.* Nov. 23, 1905.

TUBERCULIN (Diagnostic Value of). *Priestley Leech, M.D., F.R.C.S.*

Baer and Kennard[1] have examined the use of tuberculin as a means of diagnosis between tuberculous and non-tuberculous diseases. The tuberculin used came from the laboratory of Dr. Trudeau, who prepares it in a manner very similar to that of Koch. The method of applying the test is as follows: The temperature of the patient is taken every two hours for a period of twenty-four hours preceding the injection; the ordinary hypodermic syringe is used, with a needle slightly longer than usual. The needle is inserted deeply into the deltoid muscle, thorough aseptic precautions being observed. The temperature is taken every two hours for the ensuing twenty-four to forty-eight hours. If the injection be made between 8 p.m. and midnight, the temperature can be neglected until 6 a.m., as it takes six to eight hours for the reaction to begin. A rise of at least 2° F. is required to constitute a temperature reaction. The test has been applied in the wards of the Johns Hopkins Hospital for the past six years. No hard and fast rule can be given as to the dosage. In small children they have given an initial dose of $\frac{1}{2}$ mgram, followed at intervals of two days with 2 to 4 mgrams, when necessary. In older patients 2 mgrams are used as an initial dose, followed in two days by 4 and 6 mgrams as a maximum. In no case have they found it necessary to give more than 6 mgrams.

A definite group of symptoms always accompanies the fever: headache, anorexia, nausea, malaise, occasional vomiting, restlessness, etc. To those who are dealing with joint and bone tuberculosis, the

local symptoms are of far more interest and importance. Previous to the injection of tuberculin, the local seat of the disease should be examined carefully for all signs of the suspected trouble, e.g., permanent deformity, possible motions, muscle spasm, local temperature and pain. In response to the tuberculin, if tuberculosis be present, we shall have all the local signs of the disease distinctly increased, i.e., motion will be more limited, deformity will be greater, tenderness and muscle spasm will be exaggerated, and local temperature may be increased. Broadly speaking, it may be said practically that tuberculin is a specific in the diagnosis of tuberculosis. In children it is more useful than radiography, because owing to the structure of the bones and joints in childhood, it is impossible to get an efficient radiograph, even when the clinical signs are sufficient to make a diagnosis of tuberculosis. Their conclusions are :—

1. Tuberculin is the best and most reliable diagnostic agent for incipient tuberculosis of bones and joints.

2. Its proper administration is attended by no harmful effects.

3. The dosage is variable, but it is rarely necessary to exceed 6 mgrams.

4. The local signs are of equal, if not greater importance, than the general reaction in bone and joint tuberculosis.

5. Tuberculosis practically always reacts to tuberculin.

6. Diseases other than tuberculosis may react to tuberculin, but the evidence on this point is not conclusive.

7. The diagnosis of tuberculosis can be made earlier and with more certainty by means of tuberculin than by radiography.

8. The tuberculin test is applicable to private and dispensary, as well as hospital practice.

REFERENCE.—[1] *Johns Hop. Hosp. Bull.* Jan. 1905.

TUBERCULOSIS OF THE SKIN. *Norman Walker, M.D.*
F. Gardiner, M.D.

C. J. White[1] divides this into three classes :—

1. Where tubercle bacilli are found.

2. Where bacilli are absent, but animal inoculation produces tuberculosis.

3. Where there is a constitution prone to tuberculosis, i.e., a tubercular diathesis.

One would fancy the second heading would be more correctly named "where bacilli have not been found."

Class 1 includes lupus vulgaris, scrofuloderma, tuberculous lymphangitis, miliary tuberculosis, and verruca necrogenica.

Class 2, Lichen scrofulosorum, acne cachecticorum, morbilliform and scarlatiniform eruptions.

Class 3, Eczema scrofulosorum, pityriasis, and lupus pernio.

Before a case is proved to be tuberculous Macleod[2] states that the bacillus should be found, a guinea-pig should be infected, and tuberculin should give a local and general action ; whilst absence of the histo-

logical structure of tuberculosis does not exclude. Lupus vulgaris, scrofuloderma, and miliary tuberculosis, fulfil these three conditions, and, on the other hand, erythema induratum and acne scrofulosorum are still by some regarded as doubtful. The last group is that of the toxi-tuberculides.

As to the presence of tuberculosis of other organs associated with lupus vulgaris, Renaud found this in 50 per cent of cases; Haslund in 60 per cent of cases; Block in 75 per cent of cases.

Macleod then discusses the sources of infection either from without or through blood or lymph channels, and briefly describes the various types.

Adamson is quoted as explaining the origin of miliary tuberculosis following measles, on the theory that the toxin of measles softens a pre-existing tuberculous focus and gives rise to an embolic shower. The nodules in this case vary from the size of a split pea to a hazel nut, often necrose, and almost invariably heal up. Macleod found tubercle bacilli in one case, and the sections also showed that the deep vessels, and chiefly the veins of the subcutaneous tissues, were primarily involved. Gaucher and Druelle[3] also give a description of this condition which is characterized by the simultaneous outbreak of a number of foci far apart and at unusual places, and rapidly assuming the appearances of lupus. Chicken-pox, scarlatina, and whooping-cough may also, they state, cause the same, but much less frequently than measles. Four cases are recorded: one in a child of five, who convalescing after measles developed nodules of the size of hemp-seeds, especially numerous on the face, left wrist, and right thigh.

Acne Scrofulosorum Macleod defines as a form of acne occurring in scrofulous individuals. Deep sluggish lesions appear on the trunk and extremities which evolve like erythema induratum. It is not really an acne, not necessarily follicular, and no tubercle bacilli have been found as yet.

In *Erythema Induratum* no bacilli have been found, but Thibierge and Ravout have produced tuberculosis by inoculation.

Lichen Scrofulosorum occurs in tuberculous subjects, and is characterized by the presence of chronic inflammatory papules like millet seeds in size, and red in colour. It has been conclusively demonstrated that not only does this eruption occur in tuberculous subjects, but that in an individual with tuberculosis the injection of tuberculin may cause the eruption to appear either in groups of lesions on the trunk, or more commonly round a patch of lupus vulgaris or other tuberculous lesion of the skin which has reacted locally to the tuberculin injection. On the other hand, Klingmuller gives a record of the examination of seven hundred microscopical sections from this disease with no evidence of bacilli being found, and twenty-seven guinea-pigs were unsuccessfully inoculated with pieces of tissue removed from nine patients.

Treatment.—The revival of the tuberculin treatment has been very evident lately, and one is tempted to hope that these are the penultimate struggles preceding a final victory.

McCall Anderson[5] records six cases of lupus cured by old tuberculin. When injected, it (O. T.), he says, "ferrets out and attacks all tubercular foci, even bringing to light some of which there had been no previous suspicion. If we study its action in the case of external tuberculosis (and no doubt similar changes take place in internal parts), we observe not only constitutional reaction and fever but also redness, swelling, and often exudation and crustation at the seat of the disease, and in this way the morbid tissue is destroyed." The method to be adopted aims at local reaction with as little feverish reaction as possible, and the following rules are given :—

1. The initial dose of old tuberculin in the case of an adult should not generally exceed a half c.c. of 1 in 1000, and sometimes it is safer to begin with a quarter c.c.

2. If a given dose yields little or no result it is usually safer to give a second of the same strength, because the latter often acts more severely than the former.

3. The more pronounced the constitutional reaction the longer should be the interval before the following injection, an interval of several days of apyretic temperature at all events.

4. Much greater care must be exercised in increasing the doses at the earlier than at the later periods of the treatment, because the system gradually gets acclimatized to it, so much so indeed that while an additional dose of $\frac{1}{2}$ c.c. of 1 in 1000 may raise the temperature to 103° or 104°, the final dose of 1 c.c. of pure tuberculin may have no result at all.

Low[6] states that it is the practice of Neisser in Breslau to use old tuberculin regularly as a diagnostic in suspected cases. The only contra-indication is advanced pulmonary tuberculosis, and general tuberculosis has never resulted. Treatment begins with $\frac{1}{10}$ mgram. and is gradually increased, more importance being placed on the local than the general reaction. After the administration various rashes may appear, the most interesting being one exactly resembling lichen scrofulosorum. As a diagnostic it is considered invaluable, but therapeutically the results are not so successful, although great benefit may result. In a few cases with strong local reaction the tissue may break down, be cast off, and a permanent cure result; but in the majority recurrence takes place in the surrounding parts.

He regards it as specially useful for lips and mucous membranes, as by removing the thickening of these parts it restores their flexibility.

Wright[7] kills the tubercle bacilli by keeping them at 60° for some hours, and then mixes equal quantities of a blood, whose corpuscles have been already counted, and a culture suspension, examines a drop under the microscope, and by counting the proportion of bacilli to corpuscles he can calculate the number of bacilli in 1 c.c. of suspension. Thus he has a very accurate count and definite dosage of serum at hand. When organisms are introduced into the blood "opsonins" are developed, these acting by paralyzing the germs, and so rendering them suitable pabulum for the leucocytes. The phagocytic index is

estimated by mixing normal blood and bacilli, and by means of the microscope the average number of bacilli absorbed by a leucocyte is obtained, this being the index required.

The blood of a tubercular patient shows this peculiarity, that the phagocytic index is less, and treatment consists in inoculating with dead cultures to bring this index up to the normal. He has had some success, but no cures so far.

Opsonins have been recently studied by Ururich, who confirms Wright's statements that they exist only in the blood serum and paralyze the bacilli, and further finds that when treated to 60° or 65° C they lose their power. He summarises his results thus:—

1. The opsonic power of healthy people is nearly the same.

2. The opsonic power of healthy people does not vary from day to day.

3. The opsonic power of people suffering from tuberculosis may be either high or low. A low power is due to (*a*) an inherent deficiency, or (*b*) exhaustion of the machinery of immunization. A high power is due to an active response by the machinery of immunization to the stimulus of infection.

4. The opsonic power of tubercular subjects varies from day to day, and the curve thus produced shows in many cases negative and positive phases following auto-inoculation.

Graham Little[9] gives details of a case of lupus in a woman of 31, who had been previously treated with old tuberculin, after which she lost weight and developed pneumonia. Subsequently she was treated with X-rays and Finsen light with improvement, but finally she was treated with T.R. tuberculin, six injections at intervals of ten days producing great improvement, both local and general.

More recently the same writer showed a case of lupus of eighteen years' duration in a woman which had been benefited by tuberculin, used according to Wright's method. The case had been watched for eighteen months, during which treatment was carried out, and the improvement in weight and local lesion was very manifest.

Thus we have records each so far successful of treatment by three forms of tuberculin, all similar in containing dead bacilli, and if the dosage could be made accurate the results should also be similar. Wright's method appears much more scientifically accurate, but it entails hours of work for each case, and, unless simplified, will always remain an essentially "hospital" treatment.

Interesting, in conclusion, are the reports recorded by Low[11] on the microscopic changes in tuberculin exanthemata. As has been mentioned, these often simulate lichen scrofulosorum; the histological details consisting of infiltration round the blood vessels and follicle, epithelioid, and giant cell collections. No tubercle bacilli were found, but the lesions are considered by him to be more probably caused by them than by their toxins.

References.—[1]*Boston Med. and Surg. Jour.* Sept. 14, 1905; [2]*Pract.* May, 1905; [3]*Gaz. des Hôp.* May 23, 1905; [4]*Archiv. f. Derm. und Syph.* No. 72,

1904, p. 167 ; [5]*Brit. Jour. of Derm.* Sept. 1905 ; [6]*Scot. Med. and Surg. Jour.* May, 1905 ; [7]*Brit. Jour. of Derm.* Aug. and Sept. 1904 ; [8]*Brit. Med. Jour.* July 22, 1905 ; [9]*Brit. Jour. of Derm.* Sept. 1904 ; [10]*Ibid*, Sept. 1905 ; [11]*Scot. Med. and Surg. Jour.* Sept. 1905.

TUBERCULOSIS (Surgical). *Priestley Leech, M.D., F.R.C.S.*

Tuberculosis of Breast.—Anspach[1] has added 12 cases of primary mammary tuberculosis to the 65 collected by Barloch ; 2 of the 12 cases occurred in males. There was no direct connection between the disease and lactation, although 47·5 per cent of the women had borne children. Simple evacuation or curetting may lead to cure in some cases, but in others removal of the whole breast and glands is required.

Sydney R. Scott[2] has a paper on 27 cases of this disease which had been admitted into St. Bartholomew's Hospital. He refers to a form of this disease which he thinks has not been previously noted ; he terms it *tuberculous sclerosis*. Of the 27 cases he considers 10 are examples of sclerosing tuberculosis. Clinically they present the signs of scirrhous carcinoma, from which they are with difficulty differentiated. Microscopically they presented various degrees of the tuberculous process, caseation, and giant cells, but tubercle bacilli were found only in three cases. From the cases collected Scott says that the incidence of tuberculosis of the breast appears to be about 1·5 per cent, or one case of tuberculosis for forty or fifty cases of malignant disease.

The various forms of the disease found in these cases were as follows : Single or multiple caseating nodules, abscesses, or sinuses in 17 cases: in three cases deep-seated cold abscess was masked by the overlying sclerotic tissue, which exhibited the character of a scirrhus when incised ; in three cases there was a solid tumour, which on section was thought to be carcinoma. In four cases the ill-defined mass of sclerotic tissue lying beneath small superficial abscesses pointed to a suppurating carcinoma. The excess of sclerosis accounts for the frequent nodular surface of the swelling in the breast, the ill-defined outline, the retraction of the nipple, and the adherent and dimpled skin. Without histological examination, tuberculous sclerosis will most certainly be mistaken for scirrhous carcinoma.

Tuberculous Glands.—Greenwood Sutcliffe[3] has a paper on the surgical anatomy and operative treatment of tuberculous glands. He thinks that the disappearance of enlarged tuberculous glands without operative treatment is rare after they have existed as definite palpable swellings for more than six months. A stay of a few weeks at the seaside is useless ; some months are necessary ; and operation should be undertaken if, at the end of this time, the glands have not disappeared. Under the following circumstances the operation should be carried out at once :—

1. Where suppuration is taking place.
2. Where sinuses, as a result of burst abscesses or previous incomplete operations, are present.
3. Where, though not obviously suppurating, the glands are increasing in size, are causing pain, uneasiness, and deformity, and have not yielded to hygienic and climatic conditions.

4. Where gland infection has occurred in subjects unable or unwilling to incur a prolonged period of rest, or whose future would be jeopardized by the interruption of their education.

C. N. Dowd [4] has an article on the same subject, and concludes that thorough removal of the glands has given better results than any other method of treatment. The article is well illustrated, and has a good bibliography at the end.

Tuberculosis of Knee-joint.—Sir William Thomson[5] says that in the better classes, with good air and food, tuberculosis of the knee-joint may and does get better after some method of fixation, for example, **Thomas's Knee Splint.** The operation of excision has been more popular in Ireland than in England, and Thomson thinks that after erasion the danger of flexion is great, and that in some cases shortening results, and one cannot always be sure that disease is confined to the synovial membrane.

In thorough operation we do not need to encroach upon the growing line, and he believes that excision is the best for all tuberculous joints; his mortality is not 2 per cent, and the results are better than erasion. The leg is put up by a hoop-iron splint from one-and-a-half to two inches wide, extending down from the buttock fold to the foot, bent to receive the heel, and then carried forwards along the sole; in front the same material is used, and fashioned after the shape of Heron Watson's anterior splint. The two splints are kept on by bandages. He uses two dowel pins driven in $\frac{3}{4}$-inch below the cut surface of the tibia and driven through into the opposite surface of the femur so that they cross each other; two inches of each pin are left projecting from the surface, and in three or four weeks' time they are withdrawn, when some union of the bones has taken place. Particular attention must be paid to the long pouch under the quadriceps; the wound is drained on either side by openings into the popliteal surface, and the drains are removed in forty-eight hours. The wound is made as dry as possible, then thoroughly swabbed out with pure carbolic acid and washed out with absolute alcohol. A well made poroplastic splint should be worn for a year to prevent flexion, which sometimes occurs; this splint extends from an inch below the trochanter to two inches above the malleoli. Esmarch's bandage he no longer uses.

F. C. Wallis [6] has employed the following operation in tuberculosis of the kneejoint. A transverse incision is made across the middle of the patella for halfway round the limb; the skin is reflected above and below; the patella is sawn through and the fascial expansions on either side divided, thus thoroughly exposing the joint and the pouches connected with it. The whole of the synovial membrane is removed, and where the cartilage is eroded a sharp spoon is freely used, and all tuberculous foci are thus dug out. After all diseased tissue has been removed, the surface is freely wiped out with pure carbolic acid. The patella is then united with fine wire and the knee-joint closed, except at each end of the incision, where a good-sized drainage tube is inserted. The two drainage tubes are removed at the end of thirty-six hours, and

two sutures which were inserted at the time of the operation are tied. The patient is kept in bed a month, but massage of the muscles is commenced at the end of the second week. At the end of a month the patient can begin walking with crutches.

Tuberculosis of the Testicle.—Haynes,[3] in a case where tubercle was limited to the globus minor of one testicle, the other testicle having been previously removed for tubercle, excised the tuberculous portion of the epididymis and grafted the vas deferens into the globus major.

Bogoljuboff[8] has collected statistics of 178 cases of tuberculosis of the epididymis, and from an analysis of them it appears that **Resection of the Epididymis** can be considered fully as radical an operation as castration, and deserves to be more widely employed.

REFERENCES.—[1]*Amer. Jour. Med. Sci.* July, 1904; [2]*St. Bart. Hosp. Rep.* vol. xl.; [3]*Brit. Med. Jour.* May 13, 1905; [4]*Ann. Surg.* July, 1905; [5]*Birm. Med. Rev.* Nov. 1904, and *Brit. Med. Jour.* Jan. 14, 1905; [6]*Clin. Jour.* Dec. 21, 1904; [7]*Ann. Surg.* May, 1905; [8]*Arch. f. klin. Chir.* Band. lxxiv, Heft 2, 1904.

TYPHOID FEVER. *E. W. Goodall, M.D.*

Hicks and French[1] give an account of a case of *typhoid fever in a woman*, aged 24 years, who was 7½ months' *pregnant*. On the eighth day of the disease she was delivered of a live fœtus which died within an hour of birth. Sixteen days later the mother also died. In her case an autopsy showed the usual ulcers in the intestine; but in the case of the infant no pathological changes were to be seen. Widal's test was carried out in the case of both the mother and the child. The mother's blood taken at the time of delivery gave a positive reaction in 5 per cent solution, and a partial reaction in 0·5 per cent. The infant's serum was negative even at 50 per cent. Search was made for the typhoid bacillus in the blood and organs of the child, and it could not be found. In the case of the mother no bacteriological examination was made. The writers give a *résumé* of cases of a similar nature previously recorded: of these there are 21, and 9 others (in which bacteriological examinations were made) recorded prior to the discovery of the agglutination test. They attempt to answer certain questions, which, with the answers, are appended.

1. Are typhoid bacilli transmitted from the mother to the fœtus? Yes, in about half the cases. Apparently the later in the course of the fever delivery takes place, the more likely are the bacilli to be found in the fœtus.

2. Does the typhoid agglutinin occur in the serum of a fœtus born of a mother suffering from typhoid fever? Yes; in about a third of the cases.

3. Can the typhoid serum reaction occur in the fœtus in which no bacilli have been found? This appears to be doubtful. There were seven cases in which a positive Widal's reaction was obtained in the fœtus · only three of these cases were examined for bacteria; in two of them the bacilli were found; in the third (Etienne's case) they could not be found. Further evidence is wanted on this point.

4. How does the fœtus acquire agglutinin ? Either by the action of the typhoid bacilli in the fœtus, or by the direct transmission of agglutinins from the maternal to the fœtal blood. More evidence is required to decide this question.

According to Hicks and French the occurrence of typhoid fever during pregnancy does not affect the prognosis of the disease ; but the effect on the pregnancy is bad, as in the majority of cases abortion or premature labour takes place. They suggest that the "heavy mortality amongst viable fœtuses might be reduced by the induction of premature labour in the earliest stage of the fever." [A reference, however, to the table of cases given in the paper hardly leads one to expect this result. The number of cases is too small to warrant the hope.—E. W. G.]

J. D. Rolleston has studied the prognostic value of the *diazo-reaction* in typhoid fever ; he summarizes the results of his observations as follows : (1) In all but severe attacks the diazo-reaction tends to disappear in the course of the second or third week, this disappearance shortly preceding, or coinciding with, the commencement of lysis ; (2) Its reappearance during or after the completion of lysis is a warning of recrudescence or relapse, or of complications directly due to the specific bacillus ; (3) A sudden disappearance of the reaction associated with a deterioration of the general condition, is of bad omen ; and (4) The character of the reaction is a useful check to the history.

E. F. Cushing and T. W. Clarke[2] treated 100 patients at the Lakeside Hospital, Cleveland, Ohio, U.S.A., with copious **Water-drinking**. Four ounces of distilled water were given every fifteen minutes during the waking hours, so that each patient took from 8 to 14 pints in the twenty-four hours. Besides this water the patient had six ounces of milk and six ounces of albumen water every two hours during the day, and once or twice during the night. Under this treatment the amount of urine passed during the twenty-four hours rose to 8 to 12 pints or even 2 gallons. The **Bath Treatment** was employed at the same time, a bath being given when the patient's temperature rose to 102·5°. The authors compare the results in 100 cases treated in this way with 50 occurring about the same time, and 373 in 1903, treated with baths without copious water-drinking. Their observations go to show that in the water-drinking cases there is less headache, restlessness, and delirium, and that the tongue and mouth keep cleaner than in the other cases. The mortality of the water-drinking cases was half that of the others ; also perforation, phlebitis, and otitis, occurred less frequently. The percentage of hæmorrhage cases and relapses was about the same in each series. The duration of the febrile period was also equal ; but fewer baths were required in the water-drinking cases. Meteorism was much more frequent in these cases, but otherwise there was no difference as regards the condition of the bowels in the two classes of cases. On the whole the authors are of opinion that copious water-drinking is a useful adjunct to the bath treatment. The physiological aspects of the cases are discussed by T. Sollmann and J. A. Hofmann.

Amongst apyretics which have been employed recently in typhoid fever are **Cryogenin**[3] and **Pyramidon**[4]. The former is given in doses of 15 grains on the first day, 9 on the second, 6 on the third; and afterwards from 3 to 6 grs. daily according to the effect produced. The dose of pyramidon is ¼ gram (about 4 grains) given in a cachet four times a day. Sabarthey believes it to be of higher value than cold bathing. It produces profuse perspiration and diuresis. These drugs are stated to have no depressant effect on the heart, an effect which has always been a bar to the free use of such antipyretics as antipyrine and acetanilide. [I have not yet had an opportunity of trying these remedies, which might be useful in cases of high temperature and delirium where baths or packs are contra-indicated.—E. W. G.]

R. M. Harbin[5] advocates in severe, sthenic cases absolute fasting for 24 to 48 hours, as soon as the case is brought under treatment; at the end of that period a very restricted diet of slops should be allowed and the effects watched. He is of the opinion that "gelatin is a valuable adjuvant to the dietary of a typhoid patient. It serves three purposes: adds to the relish of the various liquids, lessens the nitrogenous waste from the system, and prevents hæmorrhage."

In his Bradshaw Lecture, delivered before the Royal College of Physicians of London on November 15th, 1904, F. Foord Caiger[6] gave a very complete account of the treatment of typhoid fever, based not only upon his own extensive experience but upon results recorded by others. As this subject has been dealt with at some length in recent numbers of the *Annual*, we only refer now to important or interesting points in Dr. Caiger's lecture.

Antipyretic Drugs.—Of these Caiger prefers **Quinine**, given according to Burchard's method, viz., four doses of 7½ grains repeated at intervals of a quarter of an hour in the evening of every third day during the first fortnight of the fever. But the lecturer preferred to drugs the application of cold to the skin as a remedy for pyrexia, and advocated the **Cold Bath** treatment in preference to other methods.

Antiseptics.—**Calomel**, in doses of 3 to 5 grains, is very useful during the first week of the disease in most cases. But it is apt to set up diarrhœa, and should be given with caution. Of the many antiseptics Caiger has tried at one time or another, later in the disease, he has seen most benefit result from **Sulphurous Acid**, 20 to 30 minim doses every two or three hours in an ounce of chloroform water, to which 15 minims of syrup of lemons have been added; **Oil of Turpentine**; and the **Quinine** and **Chlorine** mixture advocated by Dr. Burney Yeo; (40 minims of **Strong Hydrochloric Acid** are poured on to 30 grains of powdered **Chlorate of Potassium** in a 12-ounce bottle, which is filled up gradually with water, the mixture being frequently shaken as the water is being added so as to absorb the gas as it is evolved. To the solution when made 24 grains of **Sulphate of Quinine** are added: and of this an ounce is given every two or three hours until convalescence is reached); and lastly **Oil of Cinnamon**, 2½ to 5 minims of the essential oil, given every two hours from the time the case first comes

under treatment until the temperature has fallen to the normal. The best oil should be used, as inferior qualities are more likely to induce nausea or vomiting. All these drugs are useful in those cases where there is diarrhœa and tympanites.

For *restlessness and delirium*, **Baths, Packs,** or **Sponging** are the first remedies to be tried; but if they fail, or are contra-indicated, 30 to 40 grains of **Chloralamide,** or 15 to 20 of **Trional,** are the best drugs. If abdominal pain is present, and the cause of the restlessness or sleeplessness, then **Opium** should be given.

In the event of *hæmorrhage from the bowel*, **Opium** and complete deprivation of fluids should first be tried, and ice should be applied to the abdomen. These remedies may be supplemented by **Adrenalin Chloride,** which acts also as a cardiac tonic. When the hæmorrhage is due to a continuous oozing from the bowel, **Calcium Chloride** should be given in 10-grain doses every 3 hours.

Perforation.—Laparatomy and suture of the intestine as soon as possible after the diagnosis has been made.

John Paton[7] records a case of a girl aged 7, who developed symptoms of perforation towards the end of the second week of an attack of typhoid fever. Laparotomy was performed 23 hours later, and a perforation about one foot from the ileo-cæcal valve was sutured. There was much peritonitis and a good deal of semi-purulent fluid in the abdominal cavity. The abdominal cavity was washed out with saline solution, and drainage tubes inserted. In spite of an attack of acute pneumonia, commencing eleven days after the operation, the child made a good recovery. This case is quoted as an instance of how even the most desperate cases may do well. It is not usually necessary or advisable to wait so long as 23 hours.

References.—[1]*Lancet*, June 3, 1905; [2]*Amer. Jour. Med. Sci.* Feb. 1905; [3]*Rév. de Thér*, No. 21, 1904; [4]*Arch. Gen. de Méd.* Feb. 14, 1905; [5]*Med. Rec.* Nov. 19, 1904; [6]*Lancet, Nov.* 26, 1904; [7]*Brit. Med. Jour.* Feb. 25, 1905.

ULCER OF THE STOMACH OR DUODENUM. (*See also* Stomach, Surgery of.)

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Walther E. Rahte, M.D. Philadelphia.

Simple gastric ulcer is discussed by Robinson[1] from a medicinal and a surgical point of view. He assumes a most conservative attitude in regard to surgical intervention, and states that even in spite of the fact that the ulcer has fully developed, and pain and dyspepsia are very marked, frequent or continuous, and even if one or more hæmorrhages have occurred, cure may result from purely medical control and assistance. This is especially true of a patient in affluent circumstances who seeks and gets the best medical advice in the beginning, one who is almost immediately put upon the most appropriate dietary, and gets regularly the most suitable and useful remedies. Such cases sooner or later get well, and without surgical interference. They may suffer, more or less, from obstinate dyspepsia for quite a prolonged period, but their hæmorrhages are infrequent and relatively slight, and perforations very rarely occur.

Robinson lays special stress upon the importance of administering **Bismuth** in sufficiently large quantities, and upon the fasting stomach. He prefers to give it in aqueous solution to which is added sugar of milk, lime water, and prepared chalk. He recommends buttermilk as a food of especial value when hydrochloric acid is deficient in the gastric juice; it should be freshly made and freely taken. Its use appears to have been followed in several cases by a permanent cure. The accompanying anæmia should be treated with the vegetable forms of iron rather than the perchloride, protochloride, or carbonate, which may be more or less irritating locally by their acidity and perhaps slightly corrosive action; this is without doubt true of the tincture of the perchloride, unless given with pure neutral glycerin. However, if medicinal treatment has been faithfully tried for many weeks, and the symptoms still persist, with stationary or increased severity, surgical aid should be called.

The cases in which surgical operation (excision and sewing up of the ulcer or gastro-enterostomy) effects a cure are those of acute ulcer, in which the hæmorrhage is sudden, profuse, repeated, and the menace to life too great to await the slower results of medicinal remedies, or hygiene and time; or those of chronic ulcer, in which the abundant, recurrent bleeding shows that the degenerated, gaping artery of the diseased surface may be obstructed for a while with a clot, but will soon, through its removal, bleed afresh. Here there is but one way to obtain a cure, and that is by an operation. Otherwise, whenever the stomach dilates, by reason of the enlarging orifice of the vessel, hæmorrhage recurs, and the patient ultimately will surely die.

In cases of perforation of the stomach, the indication is to operate, and the sooner the operation is performed, the greater the chances of saving life. Instances of cure without operation are known and recorded, but they are very infrequent, and are not met with unless special conditions prevail, such as an empty stomach, very small opening from ulcer in stomach, chronic adhesions to adjacent organs, etc.

W. J. Mayo[2], one of the most eminent of abdominal surgeons, also takes very conservative ground as to the time for operative intervention in peptic ulcer. In 231 such cases seen by him and C. H. Mayo since January 1st, 1903, 74 involved the duodenum, of which 55 were in males and 19 in females. Of the 231 cases 151 affected all the coats of the walls of the organ, and these he classes as surgical ulcers; 68 of these were in the duodenum. Those involving only the mucous coats he calls medical ulcers. These are of two kinds—the mucous erosion of Dieulafoy and the usual round peptic and fissure ulcer. Of the 80 medical ulcers 56 were in women and 24 in men..

Mayo deprecates too much operating, especially among neurasthenics, and insists that the presumption should be against operation unless the indications are very clear. He does not advise operation now in acute ulcer unless there are serious complications, such as hæmorrhage or persistent obstruction, nor even in chronic ulcer unless prolonged and skilful medical treatment has failed. In neurotic subjects of

gastroptosis he discountenances operation altogether. In chronic cases when frequent relapses are seriously lowering the patient's health, in mechanical obstruction of the pylorus causing food retention, and in repeated severe hæmorrhages he would operate.

Sears[3] reports that 184 cases of gastric ulcer entered the Boston City Hospital between 1876 and the time of writing, 1905. Of the 2,127 autopsies made there since 1896 only 29 of the subjects were found to have suffered from peptic ulcer—1·3 per cent—and in 12, or 40 per cent of these, the lesion was in the duodenum. Of those treated medically 21 per cent were unsuccessful, considering deaths, relapses, and cases discharged not cured. In 291 cases cited from reports by Schultz[4] from the Breslau Clinic and the New Hamburg General Hospital, the unsuccessful cases amounted to 10·5 per cent, though 17 per cent of those who left the hospital well are reported to have relapsed afterward. Sears seems inclined to credit the surgeons with accomplishing better results by operation than those achieved by medical treatment, but admits that there are yet no reliable statistics as to the later results in any large series of cases subjected to operation for ulcer, and that till such figures are obtainable, no proper comparison can be made.

That relapses are not surely prevented by surgical intervention is well known, and is shown strikingly by a case reported by Sedgwick[5]. A 17-year-old girl having symptoms of perforation of a gastric ulcer was operated upon successfully, and eleven days later had another similar attack from which she died in 48 hours. Autopsy revealed an ulcer in the duodenum which had eroded a vessel.

Bettmann[6] has published "A Criticism of Recent Surgical Literature on Diseases of the Stomach," which is severe and even bitter in its tone. He charges the surgeons with exaggerating both the prevalence of peptic ulcer, and the danger of trusting such cases in general to medical treatment; also with claiming altogether too much for the results in them of operative methods. He quotes several series of 1,000 cases of consecutive autopsies in American hospitals, which showed less than 1 per cent of either open or healed ulcers. Only two hospitals revealed a percentage above 1·5. As against the statements of several surgical writers alleging a mortality in gastric ulcer under medical treatment of 20 to 50 per cent, Bettmann cites Leube, who reported a mortality of 2·4 per cent in 556 cases thoroughly treated by him, as well as Saundby who lost one in 200 cases, and Fleiner who did not lose even one in over 300 cases. In the city Hospital of Cincinnati, it is stated, that only 3 deaths have occurred from gastric ulcer in 15 years.

Bettmann ends his caustic criticism with a number of conclusions, including these:—

"Under appropriate treatment the severer complications of gastric ulcer can be largely prevented.

"The mortality from gastric ulcer is grossly exaggerated in surgical literature, and under proper medical treatment will not exceed 4 per cent in all classes of private patients.

Rare form of Ulceration of the Fore Arm.

"The American surgical literature on gastric ulcer abounds in exaggeration, crudeness, and recklessness.

"Pyloric obstruction is not in itself an indication for surgical interference. Many cases recover under medical treatment.

"Our patients will be best served if they submit to proper medical treatment and seek surgical advice only at the suggestion of their medical attendant."

Numerous other papers have appeared during the past year on the treatment of peptic ulcer, and those written by physicians have mostly favoured, for all acute cases at least, a reliance upon the accepted and well-approved medical measures, such as 30 to 60-grain doses of **Bismuth** several times a day, with an equally bold use of alkalies (**Magnesia and Soda Bicarb.**) when required, to control excessive acid secretion: and rest in bed for from one to four weeks with exclusively rectal feeding for the first week or ten days at least, followed then by a carefully regulated milk diet, and later by a very gradual increase in the aliments allowed.

Some surgeons have advocated operation at once in every case, but the question when there should be a resort to the knife in the ordinary cases of ulcer must be regarded as still *sub judice*.

References.—[1]*Med. Rec.*, Dec. 31, 1904; [2]*Jour. Am. Med. Ass.*, Oct. 21, 1905; [3]*Boston Med. and Surg. Jour.*, March 30, 1905; [4]*Grenzgeb Bd.* xi, *S.* 20; [5]*Lancet*, Nov. 11, 1905; [6]*Lancet Clinic*, Jan. 21, 1905.

ULCERATION OF FORE-ARM (**Rare Form**). *Harold F. Mole, F.R.C.S.*

This was a case of a woman, æt. 64, whose occupation was stuffing chairs with horse-hair, cow-hair, and fibre. Five years ago the present disease commenced with two or three pimples on back of hand, which healed up at first, but broke down again, and subsequently were followed by an ulcer on the forearm, which encircled the arm and spread upwards and downwards. On admission to hospital the condition was as follows: A rolled-up collar of thick skin surrounded the forearm and overhung the ulcer. Spreading from this down to the wrist were patches looking like healed-over lupus, and between these and on the dorsum of the hand heaped-up granulation masses, raised about half-an-inch above the surface, and which on being squeezed exuded a cream-cheese-like pus from many separate papillæ. A most offensive odour was given off from the ulcerated surface. A culture of the pus in broth showed a pure culture of a large, round organism, dividing by fission, and corresponding in appearance to the Blastomyces. There was however no mycelium (*See Plate XXVIII*).

X-rays were tried for a fortnight, with the result that the arm became worse. Large doses of iodide of potash were then given for a long time, as it was thought to be a case of blastomycetic dermatitis. This had no effect whatever. Finally, under an anæsthetic, the granulation masses were thoroughly scraped away and the rolled margin excised. A section of the latter showed typical epitheliomatous structure. Unfortunately the patient died from pneumonia a few days after the operation.

URACHUS. *A. W. Mayo Robson, D.Sc., F.R.C.S.*

Radical cure of Patent Urachus (urachal urinary fistula).—For this condition Crossfield Stevens[1] operated on a tall, strong youth who suffered for 17 years. The umbilicus was bulged forwards, and the skin was in an eczematous condition from the continual acid moisture, the whole area being very tender. The patient always experienced considerable pain when he voided urine, from the back pressure effects.

Under an anæsthetic the bladder was emptied and injected with four ounces of boric lotion (*Fig.* 69); a transverse incision was made across the hypogastrium one inch above the symphysis pubis; this incision enabled one to get a more extensive view of the bladder. The recti were separated in the middle line and retracted, and a good view of the bladder was obtained. The urachus was then sought for, but the left obliterated hypogastric artery came into view as it seemed somewhat anteriorly placed. On prolonging the separation of the recti upwards the peritoneal reflexion was well displayed, with the omentum and small intestine below it. By working the finger up between the fascia transversalis and the peritoneum the fibrous structure of the urachus could be felt lying on the lower plane and deep, not just under the abdominal wall as one is apt to imagine. The urachus, which was of the size of a clay-pipe stem, was seized and bared to the extent of one and a-half inches. The part quite close to the bladder was clamped, while another clamp was applied one inch higher up. The part between was divided and the two ends were touched with pure carbolic acid and ligatured with catgut. A purse-string suture of celluloid thread was then made round the vesical stump of the urachus, going through the muscular coats of the bladder, but avoiding the mucous. The stump of the urachus was now invaginated into the bladder and the purse-string was drawn tight, just as the appendix stump is buried in the cæcum after appendicectomy. The umbilical end of the urachus was brought up outside the abdomen and through the split recti, and anchored there to the muscle and sheath and left under the skin and fascia only, so that both ends were treated extraperitoneally on account of the eczematous condition at the umbilicus. The wound was then closed in the ordinary way, and the patient was put to bed with a catheter passed per urethram. The catheter was removed after 48

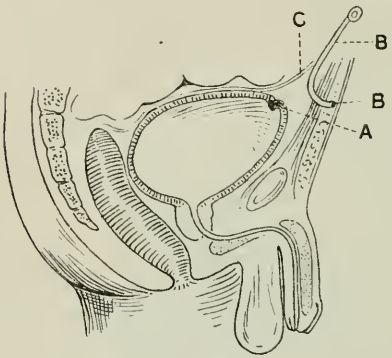

Fig. 69.—Mesial section showing the appearance of the urachus after the radical operation. The visceral end (A) having been ligatured and cauterised is invaginated through the vesical wall, the wall being closed over the stump by a purse-string suture of celluloid thread. The umbilical end (B), also ligatured and cauterised, is brought through the recti muscles and fixed under the superficial structures of the abdominal wall. The peritoneum (C) is unopened.

hours and the bladder allowed to act spontaneously, which it did painlessly and without leaking. Recovery was uneventful, and the patient went home in a fortnight much better. The excoriation about the umbilicus still persisted for several weeks, but is now much better (three months after the operation). The closure of the fistula will doubtless easily be effected by removing the remains of the urachus.

Reference.—[1] *Lancet*, Aug. 27, 1904.

URÆMIA. *Prof. J. Rose Bradford, D.Sc., M.D.*

Although the exact nature of uræmia is still unknown, it is generally admitted that it is dependent on some toxic substance circulating in the blood, and that one of the first indications in the treatment of the condition is to increase, if possible, elimination. This is to be effected especially by the bowels, and more especially by the use of **Saline Cathartics.** A further indication for these measures is afforded where the patient is dropsical. There is a general consensus of opinion that better results are obtained by promoting vicarious excretion through the bowel than through the skin. The urinary constituents are more readily excreted by the bowel, as the result of moderate purgation, than they are through the skin, inasmuch as in all conditions where urea is retained this substance tends to be spontaneously excreted by the mucous membrane both of the stomach and of the bowel, and it is only under very exceptional circumstances that any appreciable quantity of urea is present in the sweat. The medicinal agents of most use in uræmia are **Chloral, Bromides,** and, under certain circumstances, **Morphia.** The headache and sleeplessness so often associated with uræmia are greatly benefited by chloral, which has the further advantage of appreciably lowering arterial tension, chloral having a marked action on the vasomotor mechanism and causing a fall of pressure, thanks to dilatation of the peripheral vessels. The use of chloral is often avoided, owing to fear of producing serious depressing effects on the heart, and no doubt in large doses there may be some risk of this ; but such risk is really small with ordinary doses, as the circulatory effect produced by these is almost entirely a vasomotor one. In uræmia the chloral may often be advantageously given by the rectum, as in many instances the severe vomiting is a bar to its administration by the mouth.

Morphia may be used for a variety of conditions in uræmia, especially perhaps for the dyspnœa, the convulsions, and the sleeplessness. It must always be given in small doses, and its effects watched. There can be no question that its administration is dangerous in those forms of renal disease where marked respiratory embarrassment is present, owing to the presence of certain pulmonary complications, such as pleural effusion, pulmonary œdema, or in those instances where extensive dropsy is associated with hydrothorax and ascites. In other words, morphia is dangerous where the respiratory mechanism is embarrassed by what may be called mechanical complications. It is far more useful where the symptoms are entirely of toxic origin,

as for example in the convulsions of eclampsia. Its use is peculiarly dangerous where uræmic symptoms are accompanied by marked pulmonary œdema.

Dyspnœa in renal diseases is very often due to other causes than uræmia, and such patients should be examined to determine the presence or absence of large, latent, pleural affection, as where this is present treatment by **Paracentesis** rather than by drugs is required.

The high tension often associated with uræmic states may be most efficiently treated by **Nitro-Glycerin, Erythrol; Tetra-Nitrate** or **Aconite** and **Veratrum Viride** are also said to be of use. In many cases, however, the tension, although formerly increased, may at the time the patient seeks advice be low, notwithstanding the arterial changes and cardiac hypertrophy. This low tension is frequently associated with cardiac dilatation, and may be greatly benefited by the use of **Digitalis** and **Caffein.** Caffein is not only of service owing to this action on the heart, but is a very efficient diuretic in some cases of chronic renal disease associated with dropsy. In order to obtain beneficial results with caffein, it is essential that the drug should be given in small doses, not too frequently repeated, since caffein both in large doses and also after repeated small doses has a diametrically opposite action to that seen with initial doses. In small doses not taken too frequently, caffein causes a well-marked diuretic action associated with marked dilatation of the kidney, but in large doses it produces constriction of the renal vessels, diminishes the flow of urine, and may actually cause suppression. Thus the effects of the administration of caffein should be carefully watched. It may be successfully given in 5-grain doses of the citrate for two or three days at a time; then the administration should be stopped, and repeated again after an interval.

Digitalis is of value in chronic renal disease where the tension is low, and it may be used with great success in such instances notwithstanding some theoretical objections. A great indication for the use of digitalis is the presence of cardiac dilatation, though doubtless it is always desirable if possible to relieve this by measures directed to lowering the tension by causing dilatation of the peripheral vessels, or by relieving the plethoric and hydræmic state of the patient.

The delirium may be treated by the use of chloral and bromide, and uræmic coma by **Purgation, Venesection,** or possibly in some instances by **Lumbar Puncture.** Lumbar puncture is capable at any rate of procuring temporary relief both from the coma and the severe headache that is sometimes associated with severe uræmia, but it is not a measure of any widespread utility.

In the treatment of the convulsions **Chloroform** or **Morphia** is generally required.

URETER (Stone in). *E. Hurry Fenwick, F.R.C.S.*

Tenny[1] gives some conclusions based on a study of 134 cases of calculus in the ureter. Seventy-four of the patients were females, and fifty-eight males, the sex not being stated in two cases.

The location of these stones has been in a general way in one of three places, depending on the physiological narrowing of the ureter. The first point of narrowing is about 7 cm. down, and has a diameter of 3·2 mm.; the second is just above or below the brim of the pelvis, and has a diameter of 4 mm.; and the third is at a point just above the bladder, and has a diameter of 2·5 mm. The number of stones in the series of 134 cases caught in the above locations corresponds very nearly with the diameters, 35 being caught in the first isthmus, 18 in the second, and 73 in the third. In the remaining cases the location was not given. All statistics indicate that the danger of anuria decreases after the calculus passes the first constriction, and increases slightly after the calculus reaches the vesical end.

The writer insists on the importance of an early diagnosis, and the relative safety under such conditions, of extraperitoneal ureterotomy. As a rule there is but one calculus, but the exception occurs about once in eight times. The opening in the ureter or renal pelvis for removal of the calculus should be sutured if possible. The recovery is often delayed when sutures are not used. It is stated that extraperitoneal ureterotomy has been done 34 times with 5 deaths.

The clinical aspects of stone in the lower ureter of the male are very clearly reiterated by Fowler[2] in connection with two cases of his own. The striking feature in both was the marked vesical irritability. In Case I, the symptoms were so characteristic of stone in the bladder that this condition was at first suspected, and the bladder explored by Thompson's searcher; while in Case II the frequency of urination day and night was a most marked and distressing symptom. It is also interesting to note that this patient presented exquisite tenderness of the whole urethra. The sphincter urethræ was so firmly contracted that it was almost impossible to force an irrigating solution into the bladder, or to pass a catheter beyond the sphincter, except by first instilling cocaine into the anterior urethra. This condition of hyperæsthesia of the urethra has largely disappeared since the operation. Another striking feature of Case II. was the localization of the pain during the attacks of colic. At times the pain was confined to the kidney region, radiating to the back; while at another time it was strictly localized in the penis, the patient lying on his back, with the thighs strongly flexed on the abdomen, and the penis grasped with both hands.

While ureteral calculi give rise to no localizing symptoms by which we are able to determine from the symptoms alone in what part of the ureter the calculus has been caught in its descent from the kidney, it has been frequently noted that, when the stone lies in the lower portion of the ureter, it gives rise to marked vesical irritability, producing symptoms simulating those of vesical calculus, or marked frequency of urination with or without accompanying pain. In the cases reported by Morgan (Pitt's case), Bishop, Newman, and Young, in which the calculus was caught at the vesical orifice of the ureter, the vesical irritation was a marked symptom. In all of these cases the

calculus protruded into the bladder cavity, covered only by very thin mucous membrane, as in Pitt's and Newman's cases, or free and uncovered, as in Young's and Bishop's cases. Hence, it is not surprising that the symptoms produced simulated those of vesical calculus, i.e., frequency of micturition associated with pain referred to the glans penis.

Leonard[3] states that ureteric calculi are much more frequent than is generally supposed. They are, in fact, more frequent than renal stones. He deals with several interesting questions:—

1. *Where do ureteric calculi become impacted?* The most frequent seats of impaction have been the uretero-iliac junction, the juxta-vesical portion of the ureter, and the narrow portion an inch or more below the lower pole of the kidney. The frequency of impaction has been in the order named, while all multiple ureteral calculi have been found in the juxta-vesical portion of the ureter. The impaction of calculi and much of the variation in symptoms are due to their shape, size, composition, and the presence or absence of infection. So long as infection is absent and the calculus does not produce obstructive symptoms, it may remain for a long time without producing suggestive symptoms. In the kidney the larger the calculus the less liable is it to produce severe symptoms. In the ureter very small, smooth calculi may pass almost unnoted. The rougher the calculi, the longer and more painful will be the attacks, and the more chance there will be of finding blood in the urine.

The larger calculi which enter the ureter are liable to produce repeated attacks of ureteral colic, with an almost constant dull ache in the lumbar region, due to the intermittent hydronephrosis. On the other hand, the simplest and gravest conditions may be present where there are aseptic calculi of no matter what form. The very absence of symptoms is the gravest element of danger. Undetected or unsuspected calculi are a grave menace, a menace which is removed when their exact position and size are known. The importance of a method, which accurately determines their presence or absence, is self-evident, and the best remedy is radiography.

2. *What are the differential symptoms between renal and ureteric stones?* A dull ache in the lumbar region is common to both. It may be constant as the result of a large quiescent renal calculus, either sterile or in a pyonephrotic kidney. In ureteral lithiasis the dull ache is due to the obstructed flow of urine and the gradual distension of the kidney and ureter. The renal condition seldom presents colic attacks, unless clots of blood from a loosening of the calculus or masses of pus produce obstructive symptoms. The pain even then is not so lancinating in character during the sharp attack. The renal stone that produces a constant ache seldom produces obstructive symptoms of itself. The ureteral calculus causes an increasing ache as the obstruction becomes complete, which is due to the increasing hydronephrosis, and forms a prodromal stage to the acute attack. The attack is sharper. The fulminating point of the colic pain is low

down in the line of the ureter. The pain is more lancinating, and is generally accompanied by nausea and vomiting. The lumbar ache persists after the attack, unless the calculus has been expelled, and generally subsides gradually. This prodromal stage and gradual subsidence of the lumbar pain differentiate ureteral colic from renal colic, due to the temporary impaction of a small or medium-sized calculus in the infundibulum of the ureter, and the sharp attack of renal colic it produces, and also from the dull constant ache without exacerbations of the large quiescent renal calculus.

The fulmination point of the colic attacks and the direction of radiation are also often very characteristic. The acute pain of renal colic may go in all directions, around the body and to the stomach, as well as down the line of the ureter to the testicle and scrotum. The classical descriptions of renal colic group together all the symptoms, confusing and confounding them. The accurate localization of the calculi during the attack has rendered the differentiation possible. The pain of ureteral colic radiates in the paroxysms up to the kidney, as well as down through the ramifications of the genito-crural nerve. The pain is located in the testicle, the scrotum, the labium major, along the urethra, in the line of the groin, the inner side of the thigh, the knee, or even the foot ; generally in more than one of these points, sometimes in nearly all. It also has an upward direction, and in addition to the dull lumbar ache there are acute pains during the colic attack which ascend the ureter and involve the kidney, or pass to the stomach, causing nausea and vomiting. A reflex symptom in addition to the tendency to nausea and vomiting, often present in ureteral stone above the iliac artery, is due to irritation of the psoas muscle. Its relaxation is often sought as a method of relief, flexing the thigh upon the pelvis and this in turn upon the spine. The relief afforded can be readily explained by the straightening produced in the ureter at its iliac crossing, and is one of Nature's methods of facilitating the passage of the calculus.

The symptoms change for calculus below the iliac artery, and will be considered further on. In ureteral stone at or above this point palpation often affords valuable confirmatory evidence. The most common point at which a ureteral calculus can be palpated is at the uretero-iliac junction, where the ureter crosses the common iliac artery and dips down into the pelvis. This is a point of narrowing and bending of the ureter which often causes impaction. In most patients this point can be readily detected, and in all where the bifurcation of the iliacs from the abdominal aorta can be palpated. After determining this point the finger is carried to the right or left and downward along the line of the common iliac artery for an inch, or one and a half inches. The pulsation in the common iliac can generally be felt. Along this line an acutely tender point will be encountered, "like touching a sore tooth," as the patient expresses it, and often the hardness of the calculus can be perceived. Sometimes it is possible to follow up the distended and tender ureter from

this point. The tenderness in these cases can, however, be readily confused with that of a ureteritis of tuberculous origin, or one which accompanies a condition of surgical kidney. Palpation may also detect the hydro-ureter and hydro-nephrosis. The marked and fluctuating intermittent hydronephrosis resulting from calculous obstruction of the ureter, has frequently been mistaken for a floating or movable kidney, the kidney in its distended condition being mistaken for a displaced organ.

Pain and tenderness are, however, very misleading symptoms in the differential diagnosis of extra-ureteral conditions from ureteral lithiasis. Pain localized at the uretero-iliac junction, and the tenderness along the ureter, have been mistaken for appendicitis and ovarian disease. In two of the cases the patient had been previously operated upon for appendicitis, while one had also had the kidney stitched in place. In both, the ureteral calculi were subsequently recovered. Dr. Boggs, of Pittsburgh, has had a similar experience, finding ureteral calculi in two cases which had previously been operated upon for appendicitis without relief from their symptoms. The possibility of this confusion in symptomatology was mentioned by J. Hutchinson, junr., in Oct. 1901 in a paper upon Renal Stone.

After the calculus passes the iliac artery the next point of possible impaction is at the bend near the iliac spine at the commencement of the juxta-vesical portion of the ureter. Calculi, however, more generally become impacted at the vesical end of the ureter where it enters the wall of the bladder. The symptomatology of calculus in this portion of the ureter differs decidedly from that where the calculus is higher up. True, there are lumbar ache, a sense of fulness, and possibly a palpable renal tumour, but the majority of the symptoms are referred to the bladder and simulate vesical stone. There is pain referred to the glans penis or the meatus in the female, and to the urethra in both. The pain may follow urination or may be entirely distinct from it, and so severe in the urethra as to amount to veritable strangury. There is generally less involvement of other branches of the genito-crural nerve. Though pain is often complained of in the groin, and pain referred to the other side of the abdomen, it was felt in only one case in which the calculus was situated in the juxta-vesical portion of the ureter, while the pain was chiefly felt on the opposite side. Small calculi impacted in this portion of the ureter have given rise to the most severe symptoms. In one case there were complete obstruction and a pyo-uretero-nephrosis with high fever that demanded immediate operation. The obstruction was caused by three small calculi no larger than grape seeds. In another the bladder had been explored by cystotomy for encysted stone. In two or three other female patients persistent local treatment for the cystitis had been carried on for some time without any alleviation of the symptoms. A calculus in the juxta-vesical portion of the ureter can often be palpated either per vaginam or through the rectum; sometimes, however, minute calculi cannot be detected in this manner, especially

if they lie in the parasacral, or the first part of the juxta-vesical ureter.

3. *Is urine analysis of much use in the diagnosis of renal or ureteric calculi?* In difficult cases of suspected ureteral lithiasis, urinalyses are frequently of little value, and are generally negative. The presence of red blood cells immediately after a severe attack of colic is of the utmost importance, and yet they may be entirely wanting. A small amount of albumin is almost constantly present, but is of little value in differential diagnosis. The crystalline deposits in the urine are valuable, because they aid in determining the quality of Röntgen discharge that may be safely employed in the search for calculi; where there are no crystals present the preponderant salt may be determined by refrigerating the urine. The crystals thus precipitated can be recognized under the microscope. Their value is, however, only relative.

The determination of the amount of urea excreted forms the safest guide in expectant treatment, as it determines the functional capacity of the kidney, and shows whether it is sustaining injury from the presence of the calculus. In the difficult cases of diagnosis, urinalysis is often of very little value, as the urine may be perfectly normal and yet very grave conditions may be present. It is not, therefore, a method upon which much dependence can be placed in cases where a negative finding is made.

4. *Upon what shall operative intervention be based in calculous conditions, and how shall a differentiation be made between cases in which operation is demanded and those in which expectant treatment is indicated?* In renal lithiasis the detection of a calculus by the Röntgen method is of itself an indication for immediate operation. This is true even where ureteral calculi are also present. The tolerance by the ureter of a calculus in it, when there is no infection present, has been previously demonstrated by many cases reported in literature in which patients have passed long series of calculi. The detection of a calculus by the Röntgen method does not therefore constitute an indication for its immediate removal; it rather establishes an indication for non-operative treatment, if its size indicates the possibility of its passing, and there are no complications that point to immediate removal.

The conditions that indicate immediate operation in the presence of a ureteral calculus are the detection of a renal calculus in one or other kidney, the large size of the calculus making it improbable that it should pass, the presence of infection, pyrexia, etc., showing that the vitality of the kidney is endangered, and the absence of urinary flow from the affected ureter, as suggested by a sudden decrease in the amount of urine passed or in the excreted urea, and demonstrated by the absence of flow as observed by the cystoscope. Where the calculus is small, and even where there are multiple calculi, if there is a history of repeated attacks of colic marking the progress of the calculus down the ureter, there is great probability that the calculus can be passed by natural channels.

While the presence of an undetected calculus may be a grave danger and a menace to the integrity of the kidney, so soon as its exact size and location are known that menace ceases, unless there are symptoms present that indicate a progressive impairment of the function of the kidney. Comparatively few of the migrating calculi give rise to anuria, or the greater proportion of patients suffering from ureteral stone would die. The relative infrequency of symptoms that demand operation for ureteral stone is indicated by the fact that in only 15 cases was operation employed, and even then possibly the calculi would have passed, while 26 patients passed the calculi without operation. Many cases operated upon were complicated by multiple or renal calculi that demanded immediate operation.

The symptoms that suggest the employment of expectant treatment are a constant dull ache in the lumbar region, with a history of repeated acute attacks of ureteral colic that have been referred to the location of the calculus. There may or may not be blood in the urine as an evidence of the progression of the calculus, but pus and the indications of ureteral and renal infection should be absent. When these symptoms, and possibly a palpable hydronephrosis, are found in conjunction with a Röntgen diagnosis that shows a calculus of moderate size in the ureter, they may be considered as sufficient indications of a vitality and force in the kidney that will finally expel the calculus. Each attack of ureteral colic is an indication of Nature's efforts in expelling the calculus, and generally means a distinct progression. The attacks should be welcomed as indicating a near approach to expulsion. The patient should not be put to bed or advised to keep particularly quiet, unless there are dangerous symptoms that demand immediate operation. Large quantities of any naturally **Alkaline Mineral Water** should be taken. Their efficiency is probably due to their volume and diuretic action rather than to any solvent tendency, though they tend to prevent concentration of the urine and possible increase in the size of the calculus. **Glycerin** in teaspoonful doses has been recommended, and has been employed in several of the cases that have passed calculi. Its direct influence upon the passage of the stone cannot be, however, determined. **Urotropin** has had remarkable efficacy in rendering or keeping the urine sterile. No direct benefit has been seen from the use of piperazine, although it may have decreased the formation of uric acid ; the evidence has been purely negative. In phosphaturia and cases where phosphatic calculi have been passed, the employment of **Buttermilk** and formulæ containing **Lactic Acid** with **Pepsin** have been found of great value in preventing the formation of other calculi. In left-sided ureteral calculus, an **Enema of Hot Water** in the bowel will often relieve the patient of pain, and hasten the progress of the calculus down the ureter. The calculus may also be hastened in its progression by massage, when it can be reached at the uretero-iliac junction, or through the vagina or rectum. In one case the calculus was undoubtedly crushed by this procedure.

Ureteric Lithotomy.—The lower surface of the ureter, says Fowler[4], is as freely accessible by means of the iliac extraperitoneal route as is the upper portion. The ureter can be explored throughout its whole extent, down to the bladder wall, through this incision. The stones in the lower part may be either dislodged upward and extracted at a higher point, or removed by incision of the ureter at the point of arrest, and the wound sutured. Finally, cases show that when there is present a stricture in the intramural portion of the ureter, the bladder may be incised, and the necessary additional procedures carried out, without making a separate suprapubic incision.

Young, after removing a calculus lodged in this situation, found, on examination, a tight stricture below the stone, 1 cm. from the vesical orifice, which could not be dilated by bougies. Through the same incision the bladder was drawn over and an incision made into its lateral aspect, through which the ureteral orifice was exposed and the stricture cut intravesically, but this can be rarely necessary to one who is used to urethral stricture and has a small Maissoneuve at hand.

"Extraperitoneal ureterolithotomy," says Fowler, "is a highly successful operation. The mortality should be even less than that for nephrolithotomy. And with an operation combining such small risk with so great technical simplicity, this part of the urinary apparatus will be as fearlessly and as successfully exposed as the other portions which have long been considered more easily accessible. The intravesical portion of the ureter is most readily and most satisfactorily reached by suprapubic cystotomy. This gives the best exposure; the operation on the ureter can be carried out under guidance of the eye. Calculi in the intravesical or intramural portions of the ureter then are best reached by the suprapubic intravesical route: calculi impacted in the juxtavesical and para-ischial portions should be removed by the iliac extraperitoneal route."

Calculus in Female Ureter: Removal by a New Method.—Though not aware of it at the time, Garceau[5] performed his operation for removal of a calculus from a ureter in a manner similar to that of Doyen, yet in such a way as to obtain advantages not secured so far by the latter procedure. The technique is simpler. Hæmorrhage is under perfect control. The operation is rapid, perhaps the most valuable advantage of all.

In the case reported, that of a matron of thirty-four, there was no difficulty in detecting a very large stone situated fully 9 cm. from the entrance of the ureter into the bladder. It could just be reached with the examining finger. The circumstances were such that immediate surgical interference was imperative. Examination under ether led the operator to plan incising the anterior cul-de-sac, to push back the peritoneum between the bladder and the uterus as far as the broad ligament, then evert the broad ligament backward with the tip of the finger, catch the stone with the tip of the finger crooked at the last joint, force it down and toward the vaginal outlet, cut upon it

with a very small incision, and finally squeeze it out. The operation was performed as planned without the least difficulty. Immediately upon delivery the vaginal incision was closed with silver wire sutures, which took in the walls of the ureter. Some hæmorrhage occurred in the anterior *cul-de-sac*, and as it was desired not to take any more time a few clamps were left on the vessels. A gauze drain was put in. The whole operation took ten minutes, and the stone was delivered in five minutes. The convalescence was not remarkable, and there was no fistula. The ureter has remained pervious. The stone was a very large one, weighing in the dry state 7 decigrams, and it was 1 cm. long and nearly 1 cm. wide at the widest part. It consisted of phosphate of lime.

Radiography of Stones in the Kidney and Ureter.—Leonard [6] makes the following strong but judicious remarks on the value of the X-ray in detecting renal or ureteric stone: A consideration of the cases of ureteral calculus in which a diagnosis has been made by the Röntgen method, and confirmed by the operative removal of the calculi or their passage and recovery, will help to an appreciation of what this method has added to the accuracy of surgical diagnosis, and how great its influence has been in modifying treatment and increasing knowledge. Radiography cannot produce the best results when used alone; but in combination with the other recognized means of diagnosis it adds such accuracy and precision, that no diagnosis of surgical conditions of the kidney can be complete without the knowledge it affords. It often renders operation unnecessary, and always increases the efficiency of operative intervention by determining the exact amount of interference needed, and limiting the field of operation to the exact seat of the calculous lesion. This is absolutely true only in uncomplicated calculous conditions; and yet where no calculus is present, the knowledge it affords often renders safe, treatment that would otherwise have been hazardous. The early period at which this method of diagnosis can determine the presence or absence of lithiasis is of the utmost importance, for when the symptoms have become sufficiently obvious to make it possible to recognize the condition, pathological changes are often far enough advanced seriously to affect the functional efficiency of the kidney.

The effect of the greater accuracy in the diagnosis of calculous conditions by this method upon surgical procedures, has been to render a complete operation with the minimum of surgical interference impossible without the comprehensive diagnosis which it affords. It has also decreased the necessity for operation by furnishing valuable indications for a conservative expectant line of treatment, that is fully justified by results already obtained. In addition to rendering the operation complete, this method has localized the operative intervention, making it unnecessary to explore the other kidney or the ureter when only the kidney is the seat of calculous disease. The value peculiar to this method of diagnosis and the accuracy claimed for it can only be secured by a technique capable of making an accurate

negative as well as a positive diagnosis. Such technique cannot be obtained without careful study, and must be fortified by a clinical experience that renders the operator capable of translating the diagnosis accurately from a radiographic plate in which he recognizes the features essential to the establishment of the diagnosis. Infallibility is not claimed for this method, but a greater amount of accuracy has been established than is possible by other methods. Even such accuracy cannot be expected unless the operator has acquired a technique and clinical experience that warrant a belief in his accuracy. The great difficulty is that the surgeon expects equal accuracy from every radiographist, and condemns the method because his clinical experience has brought him in contact with a radiographist who is unfitted to employ it accurately.

In comparing the dangers of other methods of investigation in the diagnosis of stone in the ureter or kidney, radiography is far preferable. The only danger lies in a possible chance of X-ray burn, and this is now obviated to a great extent by using Harnack's paint. The method is much less dangerous and more accurate than segregation of the urine, ureteral catheterization, cystoscopic examination, or even sounding of the bladder. While all these methods are valuable, and should be used in conjunction with the Röntgen method, there is an element of danger due to infection that makes their routine employment in aseptic cases a matter of grave doubt, while where infection of the bladder is present, ureteral catheterization, either through the cystoscope or retrograde catheterization during nephrolithotomies, is unjustifiable, as infection will probably be carried to the kidney. The danger is equally great no matter which way the catheter is passed, as its withdrawal from the bladder to the kidney in retrograde catheterization can cause infection.

Leonard insists upon the following features of his technique as producing accuracy, and believes that a disregard of them by other operators accounts in a measure for their lower percentage of calculi found in the total of cases examined, and the lower percentage of ureteral calculi. Conversely, the high percentage of ureteral calculi is an indication of the accuracy of the method employed, although it may be in a measure accounted for by the greater difficulty in reaching a diagnosis by ordinary methods. The first essential of technique is the employment of a constant quality of Röntgen ray, the penetrating power of which is so low that it will not penetrate the least dense calculi. The negative diagnosis is established upon the axiom that where shadows of tissues less dense than the least dense calculus are shown, no calculus should escape detection.

The recognition of a negative as possessing these qualities and its proper translation are essentials of technique. The quality of ray employed has been given off by a tube the relative resistance of which as measured by a parallel spark in air was from one and a half to two inches. The tube must be capable of maintaining itself during the entire exposure at the same vacuum. Many tubes, and tubes of higher

vacuum, often vary in penetrating power, so that the light at one time during the exposure penetrates the smaller calculi. A technique based upon short exposures and a higher vacuum is open to this defect. The majority of tubes vary in vacua decidedly during an exposure, as can be demonstrated by photo-chemic tests, or seen in the reading of the milliampère-meter in series with the tube in the secondary circuit, or as noted in the parallel spark-gap. The employment of a compression diaphragm is unnecessary unless tubes are energized by coils working on high voltage circuits, in which a high amount of inverse discharge results from an improperly corrected self-induction. Leonard has always employed 20 volts or less in his apparatus, and believes that the absence of diffuse radiations results from the employment of higher voltages.

The use of a Shadowgraph Ureteric Bougie.—Before the routine employment of expert radiography in cases of renal pain, the diagnosis of stone in the kidney and ureter was merely speculative. The clinician was rarely certain as to whether a stone was present or not, or if he was assured in his own mind that a calculus did exist, he could not say whether it was imprisoned in the kidney, or whether it had passed into and had become arrested in the ureter, so similar are the symptoms evoked by stone in either position. The surgeon was forced, therefore, to explore first the kidney and then the ureter, before he could declare the patient free from stone.

Expert radiography has, however, in many cases entirely altered the uncertainty of the diagnosis, and has modified the operative procedure. A clear shadowgraph affords the surgeon who can correctly interpret shadows, a fair idea as to whether an operation is needed or not; it indicates the difficulties of the operation, affording a clue as to whether the surgeon will have to open the pelvis or cut through the kidney cortex or even remove the kidney. But it does more than this—it is able, by detecting a stone in the ureter, to draw the attention of the surgeon away from the kidney altogether, and to concentrate his efforts upon freeing that canal. One of the most distressing of failures in urinary surgery is to cut into a kidney and mutilate it perhaps irreparably, in order to find a stone which has long ago left that organ and travelled down the ureter; and yet this must happen in 22 per cent at least of all cases of renal stone if the X-ray expert is not called upon to help in the diagnosis.

Hurry Fenwick[7] in a lecture on renal and ureteric stone, declared that the expert radiographist could guide the urinary surgeon with a precision unattainable by any other means; and this assertion was based on an experience of 500 operations upon the kidney. In fact, he knew of no obligation so great as that under which the expert radiographist places both surgeon and the patient when he accurately defines a stone in the lower ureter.

But the interpretation of radiographic shadows is still in its infancy. How are we to be certain in cases when the shape of the shadow is ill-defined, when its size is small, or when it is apparently away from

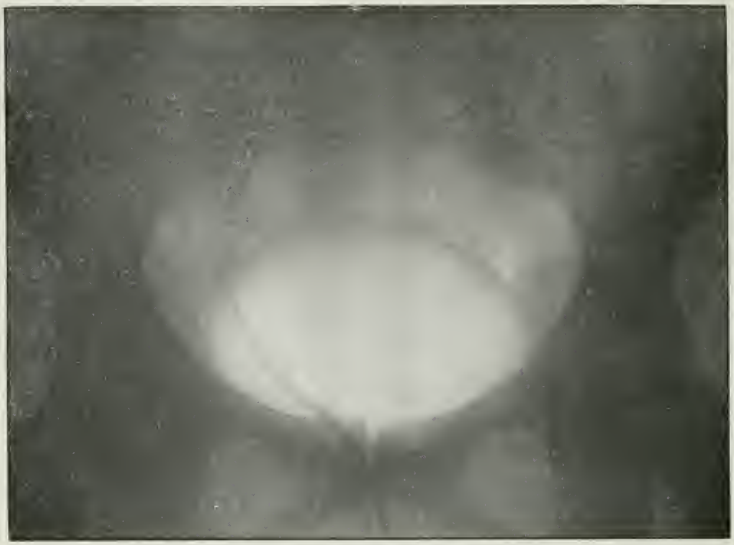

Fig. A.

Fig. B.

the line of the ureter? It cannot be to the patient's benefit or the surgeon's credit to make a huge extraperitoneal flap, and search up and down the ureter for a stone which does not exist. When Fenwick is in doubt, he passes along the ureter a bougie which casts a shadow with the X-ray. The patient is then radiographed. As the bougie just fills the canal of the ureter, he can tell at once by tracing the ureteric shadow of the bougie as to whether a stone is in the ureter or not.

As an illustration, *Plate XXIX, Fig. A*, was taken by Mackenzie Davidson from a lady, who was sent to the lecturer with bilateral renal suffering by Dr. Athel Saw, from Perth, Australia. The shadows afford a very excellent illustration of the extraordinary precision of the method. Mackenzie Davidson drew attention to a shadow, suspicious in shape, position, and size, of a small stone lodged in the right ureter. But the pelvic contents were very dense and dark, and had to be lightened up—and Fenwick gives this valuable hint how to clear up the radiograph of the lower pelvic contents. If *Fig. A* be examined it will be seen that a light half moon occupies the bladder area, and on it—or in it, rather—is the little supposed stone and the ureteric bougie *in situ* sharply defined. The clearing of the picture is entirely due to filling the bladder with air. The air is introduced by merely passing a catheter and elevating the pelvis.

But to return to the case. The little shadow in the lower ureter is no stone. It is outside the ureter, for the ureter is filled by the shadowgraph bougie. Fenwick had to perform laparotomy for another reason, and took the opportunity of finding out the cause of the little shadow. It was a patch of atheroma at the branching of large artery (arrowed in Plate), though supposed to be a stone. This is a clinical fact of which he made certain, that an atheromatous calcareous patch can cast a shadow.

The technique of the procedure was demonstrated during the lecture in the case of a girl with right renal pain and calcified mesenteric glands. The routine radiograph showed shadows which, as she has had severe pain in the region of the right kidney and ureter, had been diagnosed by two experts to be stones in the kidney and ureter, but they were proved to lie outside the ureter by the method advocated The patient was anæsthetized, placed in the Trendelenburg position, the ureteric catheter was passed by Kelly's method (time 10 seconds) and radiographed by Mr. Harnack (time 5 minutes). The plate was then developed and shown at the conclusion of the demonstration. (*Plate XXIX, Fig. B*). The radiographic bougie stands out plainly, and shows its value in differentiating between false and true shadows of ureteric stone. Its deep shadow was due to its being a very excellent shadowgraph bougie, which was specially designed and made by Mr. Marshall; it is solid, aseptic, easily passed, and proves very dense to X-rays. It will be noticed that the point has been bent down into a lower calyx, and its entire track is far away from the shadows.

This case was confirmed by exploration, calcified glands being found in the mesentery, which cast the shadows.

In X-ray detection of ureteric stone, it should be remembered that the position of the shadow does not always locate the stone for the surgeon. In some cases the shadow appears *above* the pelvic brim, apparently about the middle of the ureter. But at the operation the calculus may be detected deep down in the pelvic portion of the ureter, just above the bladder wall. This is probably due to the position of the lamp, and not to any actual descent of the stone, and if the surgeon aims at accurate operating and small incisions, he should, if possible, have the position of the stone located by Mackenzie Davidson's stereoscopic method (*see Medical Annual*, 1905, p. 182).

References.—[1]*Boston Med. and Surg. Jour.* No. 5, 1904; [2]*Ann. Surg.* Dec. 1904; [3]*Lancet*, June 17, 1905; [4]*Ann. Surg.* Dec. 1904; [5]*Boston Med. and Surg. Jour.* April 21, 1904; [6]*Lancet*, June 17, 1905; [7]*Brit. Med. Jour.* June 17, 1905.

URIC ACID DIATHESIS. *Prof. J. Rose Bradford, D.Sc., M.D.*

The deposition of uric acid in the urine depends on a great number of factors quite apart from the mere amount of uric acid present. The acidity of the urine, the quantity of salts present, and especially the interaction of the urates and the phosphates, are all factors of considerable importance. Hence the influence of diet on the deposition of uric acid is very complex, and there is some difference of opinion as to what articles of food are permissible in patients suffering from uric acid, calculus, and gravel. There is a very prevalent opinion that many fruits are harmful in this condition and also in gout. Smith Jerome has conducted a number of observations on the influence of diet containing large quantities of fruit on the deposition of uric acid. The observations were conducted over periods lasting four days, and the results contrasted with similar periods during which no fruit was taken, the other articles of diet remaining the same. The observations were made by determining the minimum amount of acid necessary to start a precipitation of the uric acid within forty-eight hours. Smith Jerome's results point to the conclusion that the precipitation of uric acid runs the same course in specimens containing equal amounts of the substance whether the diet contained fruit or not, provided that the degree of acidity of the urine is the same; that is to say, his results show the extreme practical importance of the reaction of the urine in all questions concerning the deposition of uric acid. He found that pears, fresh figs, grapes, and oranges, might be taken, not only with impunity, but probably with distinct advantage in cases where the urine tends to deposit uric acid in unnatural abundance. The beneficial effect of these fruits in lessening the tendency to the deposition of uric acid is in proportion to the amount taken, and is probably dependent entirely on the lessened acidity of the urine.

URINARY PARAPLEGIA. (*See* Bladder.)

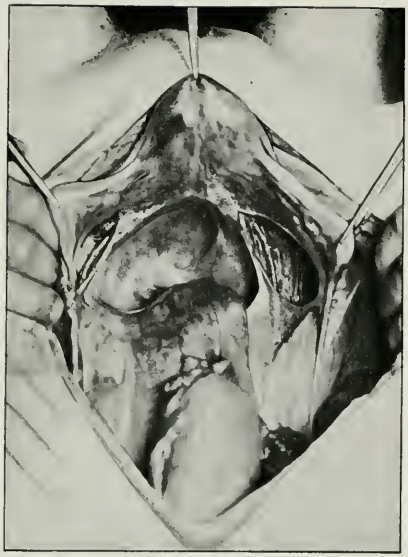

Fig. A.

The posterior layer of the broad ligaments has been divided, and the ureters are exposed to their entrance into the parametrium.

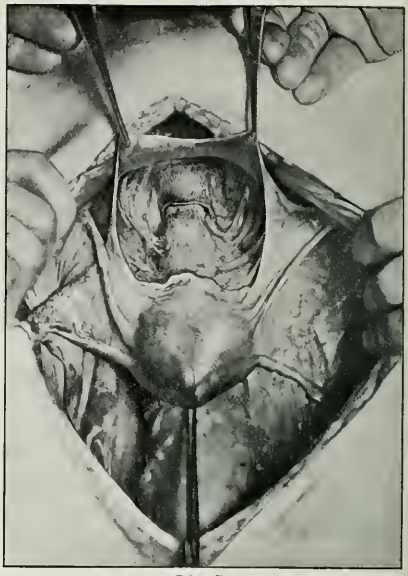

Fig. B.

The bladder is separated from the uterus.

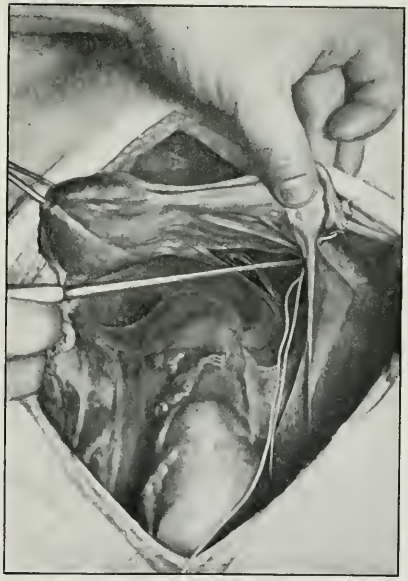

Fig. C.

The infundibulo-pelvic ligament of the right side is ligatured.

Fig. D.

Then follows the ligaturing and division of the broad and round ligament.

URTICARIA. *Norman Walker, M.D.*

Miller[1] has collected the literature on the connection between the female sexual organs and this condition. He also narrates the case of a girl of fifteen with regular four-weekly periods lasting three to four days, in which urticaria appears seven or eight days before and ceases from two to three days before the period. The eruption is of the ordinary type, and there is no similar family history. During the intervals the patient is quite free, and on two occasions when the periods were missed there was no urticaria. When dyspepsia is the suspected causative agent Dauchez[2] recommends the following lines of treatment :—

1. An electuary of **Magnesia, Sulphur,** and **Cream of Tartar.**
2. **Milk Diet.**
3. A **Tepid Bath** with 100 to 200 grs. of **Gelatin** for twenty to forty minutes, then wait two hours, and apply the following liniment without drying :—

R	Chloroformi	2–4	Ol. amygd. dulc.	90
	Tinct. aconit.	6		

4. If troublesome at night a warm decoction of poppies is applied, and afterwards a powder containing equal parts of **Talc, Zinc Oxide,** and **Starch,** is dusted on.

Gregor[3] has tried successfully **High-frequency Currents** in the chronic type of this disease. A man, aged 55, who suffered from dyspepsia, and in whom the sleeplessness and irritation lasting for two years had produced great debility, was treated for a month by means of bismuth arsenic, etc., without avail, and finally electrical treatment was resorted to. Fifteen minutes on the couch with a current of 300 ma. and the local effleuve produced immediate improvement, and after six applications there was no return.

References.—[1]*Med. Rec.* May 13, 1905 ; [2]*Gaz. des Hôp.* Aug. 3, 1905 ; [3]*Brit. Med. Jour.* July 22, 1905.

UTERUS (Cancer of). *Prof. Wertheim, Vienna.*

In my paper, read at the annual meeting of the British Medical Association, 1905, I expressed my conviction that in extensive operations for the removal of cancer of the uterus and appendages the abdominal way had great advantages over the vaginal one. The vaginal way does not permit the removal of so much of the parametrium as does the abdominal, nor does it enable the glands which lie upon the iliac vessels to be removed. But it must not be understood that we advocate on principle the performance of the extensive abdominal operation in all cases of uterine cancer. We now exempt cancer of the body of the uterus from it, because it is much less malignant than carcinoma of the cervix, as regards its extension beyond the bounds of the uterus. Also for cases of cancer of the portio in the early stage, where it is necessary to use the microscope in order to make sure of the diagnosis, we are inclined to content ourselves with vaginal extirpation of the uterus, because in these

cases, with few exceptions, the cancer does not tend to attack the parametrium and the regional glands.

The following are the details of the operation which I have performed since the autumn of 1898, with the exceptions above mentioned :—

1 The cancer is treated per vaginam by scraping and burning with Paquelin's cautery.

2. After minute disinfection, the patient is placed in Trendelenburg's position, and the abdominal cavity opened by a median longitudinal incision between the symphysis pubis and umbilicus.

3. By dividing the posterior layer of the broad ligament, the ureters, which appear through the peritoneum, are exposed up to their entrance into the parametrium. It is necessary to avoid isolating them all round, and their surrounding vascular network must be spared as much as possible.

4. After dividing the peritoneum, the bladder must be separated from the uterus.

5. Then follows the ligaturing and division of the infundibulo-pelvic, the broad, and round ligaments. The order in which these first three steps follow each other may be varied.

6. The next step is the ligaturing and division of the uterine vessels with the surrounding cellular tissue. For this purpose the following manipulation serves: The index finger of one hand is pushed along the ureter through the parametrium towards the bladder until the tip of the finger appears there; the vessels are then raised on the finger which covers the ureter so that the ligaturing and division of the vessels can take place without injury to the ureter. The bleeding of the uterine ends of the vessels is stopped by clamps or ligatures.

7. As soon as the uterine vessels are divided the vesical portion of the ureters has become easily accessible, and the preparation of the ureters can be completed. In simpler cases the pars vesicalis separates without any difficulty, partly by using the blunt end of the finger, partly with a few strokes of the scissors, up to its ending in the bladder, and the bladder itself is separated in its deeper part from the tumour and from the vagina. If the ureter is fixed the advantage of the abdominal route is most apparent, as by careful preparation one can separate even firmly-fixed ureters from the tumour without any danger to them.

8. Next follows the division of the posterior layer of the peritoneum and the separation of the rectum from the vagina. The isolation of the carcinomatous organ has now been sufficiently effected, and its removal follows.

9. For this purpose the two layers of the parametrium are taken off as close as possible to the pelvic wall, and the vagina is cut across. The removal of the layers of parametrium can be carried out without any loss of blood by applying to both layers before dividing them four or five bent clamps at each side, which can be replaced later by ligature. Before the vagina is divided it should be cleansed out by dry wiping with sterile gauze. To avoid infection from the cancer

Fig. E.

The index finger is pushed along the ureter through the parametrium towards the bladder, so that the uterine vessels are raised on the finger, and can be ligatured and divided without injury to the ureter.

Fig. F.

After dividing the uterine vessels the vesical portion of the ureter is exposed.

Fig. G.

Both ureters are exposed as far as their entrance into the bladder.

Fig. H.

Next follows the division of the posterior layer of the peritoneum.

strong clamps are applied to the vagina before its division, so as to isolate the cancer from the vagina, which is divided below these clamps. Bleeding from the paravaginal tissue is stopped by stitching round the vaginal stump. The division of the vagina, after the preceding application of such clamps, is preferable to the procedure at first adopted—namely, extracting the uterus through the vagina, having first loosened it all round—on account of the more effectual control of bleeding by the former method.

10. For the purpose of extirpating the lymphatic glands in the neighbourhood it is necessary to prolong the incision of the peritoneum upwards. The great iliac vessels are, as a rule, already bare: if not, a blunt division of the cellular tissue with the fingers suffices. Every lymphatic gland at all enlarged in the region of these vessels up to where the aorta divides, and downwards as far as the obturator foramen, must be extirpated. Careful checking of bleeding must be undertaken here also.

11. The wound must be treated as follows: The cavity created by the removal of the tumour (*Fig. 70*) is filled in loosely with iodoform gauze, which extends to the vulva. An exact closing of the peritoneal cavity over this gauze drainage is effected by the sewing up of the anterior and posterior flaps of the peritoneum. The final step is suture of the abdominal incision in layers.

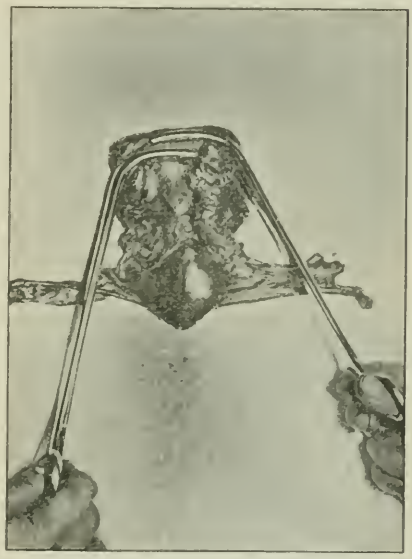

Fig. 70.—The Tumour.

The after-treatment is relatively simple. The strips of iodoform gauze are removed in from five to ten days successively. By obtaining primary union of the wound we allow the patients operated on to get up on the fifteenth day after the operation. The greatest care has to be bestowed on the bladder, which is in most cases more or less paralysed, and must therefore be emptied by the catheter at regular intervals, besides methodical washing out with a 3 per cent solution of boric acid or other suitable liquids. The bladder usually recovers its functions when the patient gets up.

In some cases, after the lapse of the first few days, uretero-vaginal fistulæ develop through secondary necrosis of the ureter. Sometimes they close again of themselves after cauterization with iodine or copper sulphate; but in other cases nephrectomy must be performed later—

a proceeding which we prefer in these cases to the re-implantation of the ureter into the bladder, because the fistulous ureter is embedded in the cicatrix. The nephrectomy was very well borne in the three cases in which it was necessary. The more, however, we mastered the technique the seldomer did necrosis of the ureter occur, and only once in the last 50 cases.

In this respect it is important, when freeing the ureters, to avoid as far as possible completely raising them and injuring the uretero-vaginal vascular network (see publications of Sampson at Howard Kelly's clinic).

According to the plan of operation and after-treatment here stated, from the autumn of 1898 up to the present time, 270 cases have been treated.

We found at first that it was difficult to reduce the mortality below 15 to 18 per cent; but by administering the anæsthetic *after* the preliminary scraping and cauterization, half an hour of anæsthesia was saved, and lately we have used Roll-Dräger's apparatus for oxygen inhalation, and the so-called Billroth's mixture for the anæsthetic. Since we curtailed the anæsthesia we have only lost 4 out of 60 cases. Krönig and Döderlein report also most excellent results, the latter having had no death amongst his last 25 patients.

My original thought was only to hold out a possibility of relief for those advanced cases in which the vaginal operation was considered contra-indicated. I then extended my aspirations to all cases of carcinoma of the uterus, with the idea that the abdominal operation, being so much more radical, would also be able to effect more in all those cases in which, according to the views prevalent at the time, vaginal extirpation of the uterus could have been carried out.

As is evident from these explanations, extirpation of the lymphatic glands was by no means the exclusive nor even the principal object of my proceedings. On the contrary, I have from the very beginning attached more importance to the thorough removal of the cellular-tissue network round the uterus. I may say that, in my opinion, the treatment of the ureters described, and the possibility offered in the way of removing the parametrium together with the uterus is the principal object, and that the resolve to extirpate methodically the regional lymph glands was an addition.

To-day, after six and a half years years of continual activity and having operated on 300 cases, the superiority of the abdominal way has become a certainty by the determination of the after results. Of cases operated on by our method, 60 to 70 per cent remained free from recurrence, after 4 to 5 years' observation—a result hitherto attained by nobody else. And we attained this result, although we refused for the operation only 50 patients out of 100 seeking relief. So the real efficacy of the work we have done is four or five times that done hitherto by the vaginal operators (the table on next page containing the comparative statistics).

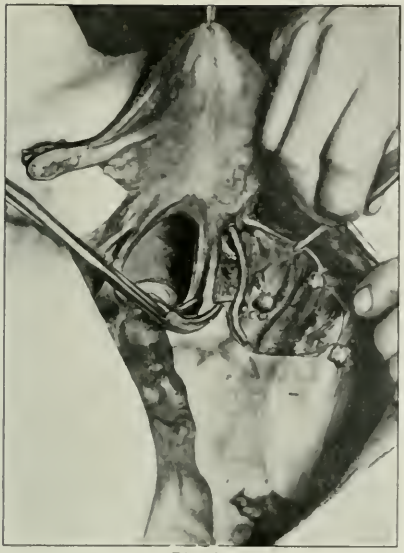

Fig. I.
Four or five bent clamps are applied to the parametrium at each side.

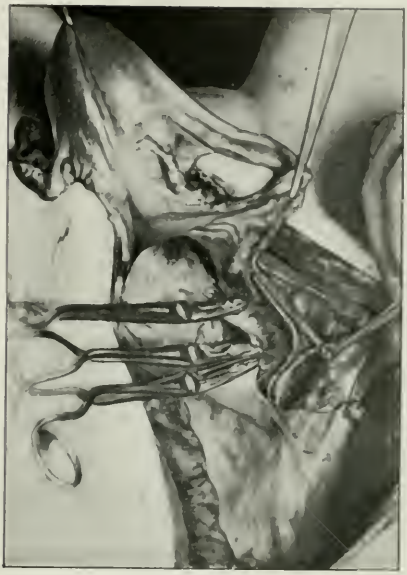

Fig. K.
The parametrium is divided.

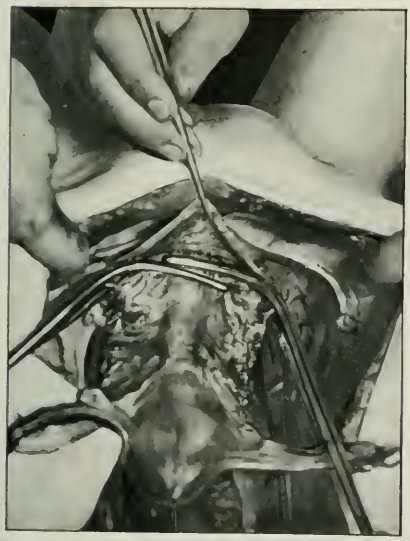

Fig. L.
Strong clamps are applied to the vagina before its division.

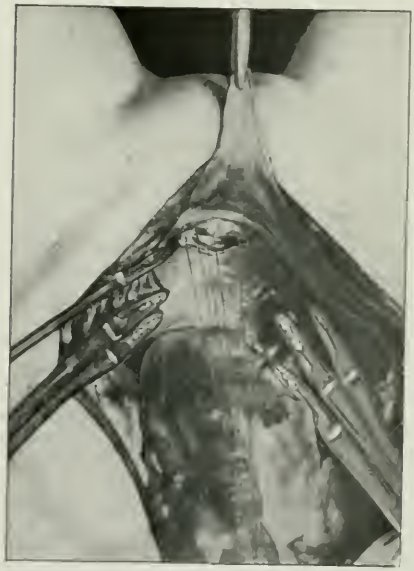

Fig. M.
The vagina is cut across.

Comparative Statistics of Operations for Carcinoma of Cervix Uteri and Portio Vaginalis (excluding Carcinoma of Corpus Uteri).

To obtain the "real efficacy" per cent. after a number of years, denoted in the table by A, these results are calculated according to the formulæ (1) of Winter $= \frac{O \times D}{100}$, (2) of Waldstein $= \frac{O \times D \times (100 - M)}{10{,}000}$, the latter results being placed within brackets.

Wertheim. Report of the First 479 Cases.	Zweifel. Glockner. *Hegar's Beitr.*, 1902.	Chrobak. Knauer. *Hegar's Beitr.*, 1901.	Schauta. Waldstein. *Arch. f. Gyn.*, 1901.	Pfannenstiel. *Monatsschr. f. G. u. G.*, 1903, p. 616.	Olshausen. Deutscher Gyn. Kongr., 1903.	Doderlein, *Hegar's Beitr.*, 1904.		
						Carcinoma of Cervix and Body.	Cervix Carcinoma only.	Cervix Carcinoma only. Operation after Wertheim.
A5 = 20.4 (11) O = 29.2 D = 70 M = 46	A5 = 9.1 (8.5) O = 20.7 D = 34 M = 6.6	A5 = 4.9 (4.6) O = 15.6 D = 31.4 M = 5.6	A5 = 3.4 (3.1) O = 14 D = 23.3 M = 10.3		A5 abt. 15.5 (14.3) O about 40 D = 38.8 M = 7.3	A5 = 19.6 (16.4) O = 48.3 D = 40.6 M = 16.4	A5 = 10.4 (8.7) O = 44 D = 23.7 M = 16.4	
A4 = 28.5 (23.4) O = 45 D = 63.3 M = 18	A4 < 9.5 (8.9) O = 26.7 D = 34 M = 6.6	A4 = 6.3 (5.9)	A4 = 5.1 (4.6)					
A3 = 29.3 (25.8) O = 48 D = 61 M = 12	A3 < 10.0 (9.3)	A3 = 6.5 (6.1)	A3 = 6.6 (5.9)	A3 = 16.8 (16.3) O = 28.6 D = 58.8 M = 3.1	A3 = 25 (23.1) D = 62.2			
A2 = 31.6 (21.4) O = 48.6 D = 65 M = 22	A2 < 14.6 (10.8)	A2 = 7.4 (7)	A2 = 8.6 (7.7)	—	A2 = 29.6 (27.4) D = 74	—	—	A2 = 42.3 (35.4) O = 65.7 D = 64.5 M = 16.5
	The "less than" sign is used here because in A4, A3, and A2 carcinoma of body has been included.		Including cancer of body	Including cancer of body	Including cancer of body			

A5 = The efficacy after 5 years.
A4 = The efficacy after 4 years, etc.
O = The cases operated on out of 100 seeking relief,
D = The cases remaining healthy out of 100 operated on.
M = The cases that succumbed to the operation and its effects only out of 100 operated on,

UTERUS (Diseases of). *Arthur E. Giles, M.D., B.Sc, F.R.C.S.*
Victor Bonney, M.S., M.D., B.Sc., F.R.C.S.

Myomata.

As usual the year's literature bearing on these tumours is voluminous. Within the last twelve months a number of well-known gynæcologists both here and abroad have published full details of series of cases, numbering one hundred or more, on which they have operated. Thus the sum-total of our knowledge concerning these neoplasms is steadily increasing, not only as regards their clinical features, but as to their pathological bearings also. A survey of the year's work gives a strong sense of the widening scope of operative treatment, and a more correct appreciation of the dangers attendant on these tumours; so that the tendency towards early operative treatment which is so conspicuous a feature of modern gynæcology appears to be more than ever justified.

Etiology.—Whilst our knowledge of myomata has so advanced in all other particulars, one is fain to confess that as to their causation we can add nothing to the theories put forward years ago by earlier workers, such as Cruveilhier and Gusservw.

Pinard[1] is a strong believer that the absence of pregnancy favours their development, and bases his views on figures taken from the Clinique Baudelocque. He believes that fertilization, to be a real safeguard against the production of myomata of the uterus, must be followed by the physiological stages which constitute the full function of reproduction, terminating with lactation. Whilst his paper is a strong support to views previously expressed by Cruveilhier, Emmett, and others, the matter cannot be held to be nearly settled.

Pathology.—*Myomata and Malignant Disease.* Within the last few years certain authorities have contended that myomata bring with them an increased liability to malignant disease of the uterus. Richelot[2] is the most ardent supporter of this view as regards *cervical carcinoma*, believing that the stump left behind in sub-total hysterectomy is a constant menace to the patient, for this reason. Noble, of Philadelphia, also called attention to the frequency with which carcinoma of both body and cervix was found with myomata. Cullen[3], from a large pathological experience, also inclined to this view. In England its principal advocates have been Spencer and Martin. The general opinion of English gynæcologists appears to be against these authorities, or at all events does not support the full extent of their views, and holding them not proved prefe s the easier sub-total operation to the more lengthly and severe total extirpation.

Myomata and Carcinoma Corporis.—That carcinoma of the corpus and myomata are often met with cannot, we think, be denied by any gynæcologist of experience. Its frequency has been noted by Noble, Cullen, Bland-Sutton, and others. Whether the two neoplasms have any causal relationship, or whether their co-existence is only due to some similarity of etiology, it is difficult to determine. It is certain that in myomatous uteri after the menopause it is not infrequent

to meet with that condition of soft diffuse overgrowth of the endometrium known by the Germans as "diffuse benign adenoma," and that between this abnormal but non-malignant hypertrophy and a definite malignancy, we meet with several gradations of overgrowth ending in a diffuse adeno-carcinomatous condition of the mucous membrane. The balance of evidence, therefore, is in favour of those who hold up this possibility as one of the justifications for early operative interference in myomatous disease of the uterus.

Myomata and Sarcoma.—Cullen[4] has traced direct conversion of a myoma into sarcoma. Bland-Sutton[5] describes a soft jelly-like tumour of rapid growth which, occurring in young patients, serves to bridge the gap between myomata and sarcomata. That sarcomatous degeneration of a myoma is not rare, may be proved by a glance at the various series of cases recorded by different operators.

Thus Haultain[6] found sarcomatous degeneration in 2 out of 120 cases of his own; Hirst[7] 3 out of 189; whilst McDonald[8], from a collected series of over 1,000 cases, records 20. Piquand[9] has also shown the frequency of sarcomatous degeneration of myomata. It will be noticed that there is a marked similarity in these recorded rates of incidence, namely a little under 2 per cent. The gravity of this complication, and the possibility that a still higher rate might appear if it was possible to include all cases dying without operation, should tend to make practitioners view the presence of a myomatous uterus with more apprehension than they have been accustomed to do. When treated early these cases appear to give more favourable results than is customary with sarcomata elsewhere.

Adenomyomata.—A good deal of attention has lately been drawn to a tumour of the uterine wall, composed of unstriped muscle with islands of glandular tissue embedded in it. These rare tumours have been recorded with increasing frequency. Originally figured by von Recklinghausen, they were studied by Cullen and others as opportunity arose. In England readers may refer to a paper by Cameron and Taylor[10]. The majority of writers believe the glandular tissue to be developed from Müllerian elements. Whitridge Williams[11] described a case in which multiple islands of decidual tissue with glands were found embedded in the uterine muscle in a woman dying of placenta prævia. This condition would appear to be an intermediate step in the formation of these tumours. In macroscopic appearance they somewhat resemble the frank myoma, but differ from it in having no distinct capsule. They are said to be liable to carcinomatous degeneration. They require the same treatment as myomata, from which they can only be distinguished after the removal of the uterus.

Other Forms of Degeneration of Fibromyomata.—In the series of cases published by Bland-Sutton, Haultain, Clarence Webster, McDonald, and others, special stress has been laid on the nature and relative frequency of these degenerations. Indeed, it may be said that the graver side of the symptomatology of myomata is principally

dependent upon these degenerations. No other class of tumour is liable to so many secondary changes as myomata.

Red Degeneration.—Amongst these changes attention has been directed lately by Fairbairn and others to a form of diffuse necrobiosis, which results in the tumour becoming softened, and assuming a curious red colour of all degrees of shades, from a pale pink to a mahogany red-brown. This form of degeneration is apt to onset rapidly, the tumour becoming tender to touch. Slight fever is not infrequently met with, probably toxæmic in origin. It has been associated with recent pregnancy in a certain number of cases, and usually affects the younger patients.

Its occurrence should be suspected when a myoma in a young patient suddenly becomes painful without obvious cause. The increased menorrhagia which accompanies his change, together with the fever and toxic absorption, rapidly deteriorates the patient's health. For this reason these cases should at once be subjected to operation.

Unusual Sites of Myomata.—Herbert Spencer[12] has collated a number of cases of myomata occurring in the intra-abdominal portion of the round ligament. These tumours occur at all ages, and their principal claim to attention is their liability to be mistaken for ovarian cysts, which they simulate by their isolation from the uterus.

The Cardiopathy of Myomata.—Wilson[13] has called attention to the cardiac changes met with in uterine myomata. He finds that in the more severe cases of this disease functional and organic affections of the heart and circulatory system are often coexistent. The cardiac degeneration most often present is described as a mixture of brown induration and fatty degeneration. He quotes a number of cases that have come under his own observation in this connection, and details at length the results recorded by others of their clinical and post-mortem experience in similar cases. He states that not less than 40 to 50 per cent of persons suffering from the more severe symptoms of myomata, exhibit some form of cardiac insufficiency: a truly formidable statement!

The practical points which he deduces from his investigation are four: (1) To submit the patient to radical cure before the heart has deteriorated; (2) To carefully examine the hearts of all patients suffering from myomata; (3) To subject the patient whose heart is found to be degenerate to a course of tonics and rest before proceeding to operate; (4) That ergot is contra-indicated in myomatous menorrhagia where the heart is insufficient, since, by increasing peripheral resistance, it embarrasses its action. He notes remarkable improvement in the cardiac condition after appropriate operation.

The Effect of Child-bearing on Myomata of the Uterus.—Dakin[14] discusses this question at some length. He considers that it is undoubted that myomata nearly always enlarge during pregnancy. This has been denied as a general occurrence by some, who contend that the appearance of rapid growth is less due to the myoma than to the hypertrophy of the tissue over it. He states that they are frequently

found to be soft and œdematous during this period. It is certainly a fact that during pregnancy sessile subperitoneal myomata often simulate pedunculated tumours, owing to the softening of the uterine muscle around them; a point of some importance, as it may lead to an operation undertaken with a view to myomectomy when the tumour is really unsuitable for such an operation.

Necrosis of the tumour and axial torsion are rarely met with in pregnancy. He refers to the extraordinary way in which myomata, even though occupying the pelvis, may gradually rise out of it as pregnancy progresses. In short, the risks to be apprehended from myomata during pregnancy are not great. It is during parturition and puerpery that the more likely dangers are encountered. Although it is true that myomata obstructing labour are frequently drawn up from under the head in a truly remarkable way, yet the dangers to the patient do not always disappear with the relief of the obstruction. Tumours displaced in this way are liable to necrosis and axial rotation, although Dakin says that on reviewing the accumulated facts these tumours are not apt to suffer as severely as might at first be thought likely. During puerpery these tumours may, it is said, "absorb." Of the recorded cases of this happy event few have been fully proved. These cases have been recently exhaustively reviewed by Doran[15]. More commonly degenerative changes are apt to set in, either of an acute inflammatory nature, or by a species of fatty necrobiosis.

A review of the recent literature on the subject of myomata and child-bearing, brings one to the conclusion that whilst the dangers attendant on this coincidence may have been exaggerated, yet the sum-total of evil possibilities is a formidable one.

Spontaneous Disappearance of Myomata before the Menopause.—Alban Doran[16], in a critical review of this important subject, has carefully examined a number of recorded cases, and weighed the evidence of many authors. His paper, which is both interesting and learned, leaves one with the conviction that myomata may, though rarely, spontaneously be absorbed before the menopause. According to Doran this may happen as a result: (1) Of destructive inflammatory changes; (2) By involution after delivery; (3) By aseptic necrosis and softening. The extreme rarity, however, of this event in the life history of a myoma, gives the subject an academical interest only, and does not affect the question of the desirability or not of early operative interference.

Treatment of Myomata.—The importance of this subject received full recognition at the Annual Meeting of the British Medical Association in 1904 In the Section of Surgery, a discussion took place on the Indications for Hysterectomy, and the methods of performing it. Bland-Sutton[17], who opened the debate, is well known as an ardent advocate of early operation, and enforced his views in a long and interesting paper. He considers that the indications for the removal of myomata may be grouped under six heads: (1) Myomata, causing profuse and long-continued menorrhagia; (2) Septic or gangrenous myomata;

(3) Impacted and irreducible myomata, causing pain and retention of urine; (4) Myomata growing rapidly, or degenerate, softened, or cystic; (5) Cervix myomata; (6) Myomata complicating pregnancy, delivery, and puerpery in certain circumstances.

As to the choice of operation, this authority prefers the supra-vaginal or sub-total hysterectomy as the operation of election in routine cases. He does not believe that the possibility of carcinoma subsequently developing in the cervical stump is sufficiently likely to compensate for the increased risk that the removal of the whole organ entails. He lays stress on the desirability of conserving one or both ovaries; for although these organs undergo atrophy after removal of the uterus, yet the menopausal symptoms associated with this process are slight as compared with those following bilateral oöphorectomy.

In the discussion which followed, the first speaker's views were generally agreed upon. Taylor[18], in a paper on the choice of operation in myoma, prefers sub-total hysterectomy for choice, but considers the method of performing pan-hysterectomy devised by Doyen as a good operation in certain cases. He speaks warmly of oöphorectomy for myomata in patients nearing the climacteric, blanched by hæmorrhage, and broken-down in health, and who demand the safest and quickest method of relief. There is no doubt that this operation does relieve the menorrhagia in many cases, but certainly not in all; whilst continued growth, pressure symptoms, and peritonitis from degenerative changes occurring in the tumour, are unfortunately only too common after this procedure.

Clarence Webster[19], in a record of 210 cases treated surgically, also advocates the sub-total operation in the larger number of cases. On the other hand Richelot in France, and Spencer in England, warmly advocate pan-hysterectomy as a routine measure, basing their views on the alleged frequency of carcinomatous degeneration of the cervical stump, as well as on the superior convalescence which they state follows the complete operation.

Butigne[20] has answered Richelot's views in an exhaustive paper. He sums up the views of thirteen speakers who took part in the discussion following Richelot's paper at the Société de Chirurgie. The general opinion was that the liability to carcinoma of the cervix was not sufficient to outweigh the advantages of the sub-total operation as regards easiness of performance and saving of time.

Thus a review of the year's literature shows that sub-total hysterectomy at present is held to be the measure of election in the treatment of uterine myomata.

Displacements.

Retroversion and Retroflexion.—That the treatment of these displacements is not yet on an entirely satisfactory basis is proved by the large number of authors who continue to emit contributions of greater or less value on the subject. Bantock[21] is a warm advocate

of the **Pessary.** He prefers the Albert-Smith modification of Hodge's instrument. He emphasizes the necessity of getting the uterus into complete **Anteflexion** before adjusting the instrument. Too many practitioners are content with a cursory turning forward of the fundus by means of a sound. This is only the *first stage* in *reposition.* It should be followed by a bi-manual anteflexion of the uterus until the whole length of the corpus can be felt in contact with the anterior vaginal wall. By this manœuvre one makes certain that no intestine remains in the utero-vaginal pouch.

The majority of the speakers in the discussion which followed this paper agreed in believing that in certain cases of movable retroversion there was a field of usefulness for the pessary; but there appeared to be a distinct tendency towards operative measures. This, indeed, appears to be the growing attitude of the profession towards cases of retrodisplacement giving rise to symptoms.

Giles[22] has lately exhaustively reviewed the subject. There can be no doubt that the proportion of patients in whom a pessary does maintain the uterus in normal position is a small one, whether this be due to the want of skill in insertion, or the primary unsuitability of the case for such treatment. But granted that instrumental support does in properly-selected cases keep the organ forwards, there yet remains the inherent disadvantage of wearing a foreign body, viz., the recurrent manipulation required to keep it clean and to periodically change it, the tendency to inflammatory troubles and discharge, and the progressive stretching of the vagina which it inclines to produce. In short, the patient is never free from her affliction, and what with daily douching, visits to the doctor, and so on, there is a strong likelihood of getting her mind unduly centred on her generative organs. Hence the increasing favour shown for operative measures.

Are the results obtained by these means superior to the pessary? Much evidence is now obtainable, and perhaps the most useful paper on this subject that has been published during the year is that by Russell Andrews[23], who has carefully analysed the effects of ventral fixation on subsequent pregnancy and labour from 395 recorded cases. Abortion occurred in 9 per cent of the cases, which must be considered very favourable to the operation, at least this proportion occurring in normal pregnancy. Nor does it appear to have led in any degree to other disturbances during pregnancy. In labour, the principal result appears to have been obstruction, necessitating Cæsarean section. This complication appears to have been due in many cases to abnormal elevation and rotation backwards of the cervix. It seems to have followed some methods much more frequently than others. That method in which the anterior uterine wall is fixed to the abdominal parietes seems to have given by far the best results in labour, particularly those cases in which only the peritoneal surfaces were included in the fixing sutures. On the other hand, these are the cases most likely to relapse owing to stretching of the artificial adhesion.

Our own experience tallies with Andrews' conclusions, in that the

ventral fixation of the anterior wall is undoubtedly superior to the posterior wall or fundus. This last operation has been peculiarly prolific in disasters during pregnancy and labour, and is now very rightly abandoned.

On the whole the literature strongly justifies the operation of **Ventro-Fixation** as a means of relieving the symptoms of retroversion. Several new methods of performing this operation have been added within the last year to the already long list, the most novel being that of Alexandroff[24], who approximates by sutures the bases of the broad ligaments from the vagina.

Prolapse.—A somewhat similar operation to this has lately been advocated by Tweedy[25] for procidentia uteri. Tweedy exposes from the vagina the strong ligaments of Mackenroelt which run in the base of the broad ligament, and sutures them together in front of the supra-vaginal cervix. The fundus of the uterus is then secured to the anterior vaginal wall, and a colpo-perinæorrhaphy is generally performed. The author affirms that this procedure is probably superior in cases of intractable and severe prolapse to the more radical extirpation of the uterus and vagina as practised by Martin[26]. He does not state whether he would advise it in women still within the child-bearing period. To judge from the results of vagino-fixation for retroversion it would not be advisable in such cases.

References.—[1]*Ann. de Gyn. et d'Obst.* Jan. 1905 ; [2]*Gynecol.* Oct. 1903 ; [3]*Med. Soc. of New York,* Nov. 1904 ; [4]*Ibid* ; [5]*Brit. Med. Jour.* Oct. 22, 1904 ; [6]*Brit. Jour. Obst.* April, 1905 ; [7]*Obst. Soc. of Phil.* Jan. 1905 ; [8]*Albany Med. Ann.* July, 1904 ; [9]*Rev. de Gyn. et de Chir. Abd.* May-June, 1905 ; [10]*Brit. Jour. Obst. and Gyn.* March, 1904 ; [11]*Ann. Gyn. and Ped.* Jan. 1905 ; [12]*Brit. Jour. Obst. and Gyn.* Feb. 1904 ; [13]*Ibid,* August, 1904 ; [14]*Ibid* ; [15]*Ibid* ; [16]*Ibid* ; [17]*Brit. Med. Jour.* Oct. 22, 1904 ; [18]*Brit. Jour. Obst. and Gyn.* August, 1904 ; [19]*Amer. Med.* March 11, 1905 ; [20]*La Gynecol.* Dec. 1903 ; [21]*Lancet,* Dec. 31, 1904 ; [22]*Med. Press,* July, 1904, and Feb. 8, 1905 ; [23]*Brit. Jour. Obst. and Gyn.* 1905 ; [24]*Med Rec.* Aug. 1905 ; [25]*Med. Press,* April 5, 1905 ; [26]*Ibid,* Oct. 1904.

VACCINATION. *E. W. Goodall, M.D.*

W. Sheen[1] records a case of accidental vaccination on the face, in which the resulting lesion much resembled anthrax. The patient was a woman aged 30. She had on her left cheek "a lesion consisting of a central depressed black slough, a quarter of an inch in diameter, with a ring of small, nearly confluent vesicles round, a few of which were broken, and exuded a turbid fluid." The cheek was a good deal swollen, and the glands below the jaw enlarged. The cheek had been scratched eight days previously by the patient's infant, who had recently been successfully vaccinated. An examination of the fluid for anthrax bacilli was negative. Sheen refers to another similar case occurring at Guy's Hospital.

Reference.—[1]*Lancet,* Nov. 26, 1904.

VARICOSE VEINS (Leg). *Priestley Leech, M.D., F.R.C.S.*

Viannay[1] says that total extirpation of the saphenous vein is unnecessary to carry out Trendelenburg's operation, and that division of the vein in Scarpa's triangle just below its junction with the

femoral vein is the best way of obtaining the results given by Trendelenburg.

Marchais[2] states that whatever the primary cause of varicose veins in the leg may be, the secondary cause which needs treatment is venous hypertension. The contraction of the muscles of the leg is a great factor in the emptying of the veins in health, and this means should be employed in varicose veins. With the exception of infectious complications, varicose veins should be treated by the following rules: Wear no elastic stockings or bandages, never remain standing, and never walk slowly. Never take prolonged hot baths; take **Cold Baths** or douches (this gives tone to the muscles). **Massage** is a subsidiary help, and is indispensable in patients with pronounced œdema, pains, and cramps; it consists of *effleurage* of the whole limb. and in *pétrissage* of the sural triceps and the crural triceps; massage of the veins themselves is useless, and massage may be left off when the patient is able to walk quickly.

For **Walking** to be of any use a certain speed and duration are necessary; the speed is of great importance; the military step is best, 110 to 120 steps a minute. A minimum time of two and a half hours' walking is to be aimed at, and this should be divided into as many portions as possible; e.g., five walks of half an hour, ten of a quarter of an hour, or fifteen of ten minutes. The only rule is that the patient must stop as soon as he feels a little fatigued, and sit or lie down, but not remain standing. The duration of two and a half hours should be obtained at the end of fifteen days by beginning with five or six walks of ten minutes each daily for the first three or four days.

Dr. Robert Kennedy[3] says the best remote results in varicose veins of the leg are obtained by **Excision of the Saphena Vein** in the thigh up to 1½ or 2 inches of its opening into the femoral vein. When the vein has been removed in the thigh its removal is continued down into the leg, and the prominent varices are also removed as far down as they extend. Even if not apparently varicose the saphena vein in the thigh is always found dilated on operation. After Schede's operation he has seen recurrence take place.

References.—[1]*Rev. de Chir.* 1905, vol. xxxi. p. 79; [2]*Gaz d. Hop.* Nov. 19, 1904, No. 136, p. 1333; [3]*Brit. Med. Jour.* Oct. 29, 1904.

VISION. (*See* Refraction, *and* Eye, Diseases of the.)

VITILIGO. *Norman Walker, M.D.*

Montgomery[1] gives particulars of a Mexican, where the affection began at five or six years of age and steadily increased until patches were distributed all over the body. Local applications and internal medications were employed for three months without avail. Finally, treatment was started by means of the **London Hospital Lamp**, only those spots on the face and hands exposed to view being treated. Nine sittings in all, and about five applications of ten minutes

each to the spots were given. Distinct redness was produced at the time, and four months later there were no signs of disease on the parts treated.

Reference.—[1]*Jour. of Cut. Dis. N.Y.* Jan. 1904.

VOMITING (Infantile). (*See* Diarrhœa and Constipation, Infantile.)

VOMITING OF PREGNANCY. (*See* Pregnancy.)

WARTS. *Norman Walker, M.D.*

Keen[1] records twenty-five cases of malignant degeneration of papillomatous growths and moles.

Injury or repeated irritation may be factors, but very often the degeneration occurs without apparent cause.

Warts proper become epithelial carcinomata. Moles, he says, become sarcomata.

Malignant degeneration usually begins after the growths have existed for thirty years or longer as a harmless deformity. The conclusion he rightly draws is that they should be excised before malignancy begins.

X-ray Treatment is now commonly and successfully employed for the removal of warts.

Reference.—[1]*Jour. of Amer. Med. Assoc.* July 9, 1904.

WHITLOW (Treatment). *Priestley Leech, M.D., F.R.C.S.*

Reclus[1] recommends the injection of **Stovaine** as an anæsthetic when a whitlow has to be opened. He proceeds in the following manner: With an ordinary subcutaneous syringe he injects a half per cent solution of stovaine into the base of the finger under the skin, and leaving the needle *in situ* he repeats the injection three or four times until the skin whitens; he then injects with another syringe round the four sides of the finger, so as to surround it with a ring of anæsthesia: in a few minutes the finger is rendered quite insensible.

Reference.—[1]*Med. Press*, Ap. 26, 1905.

YAWS. (*See* Skin Diseases, Tropical.)

Part III. Miscellaneous.

SANITARY SCIENCE, 1905.

By JOSEPH PRIESTLEY, B.A., M.D., D.P.H.,
Medical Officer of Health, Borough of Lambeth, London

AËRIAL CONVECTION OF SMALLPOX.

Prominence has once again been given to the much-vexed question of the aërial convection of smallpox by the publication of reports by Dr. Reece (Local Government Board Inspector), and Dr. Hope (Medical Officer of Health), on the Liverpool smallpox outbreak, 1902-3.

Dr. Reece sums up his Report by stating that "looking to all the circumstances which have come under review, I am compelled to consider that the influence of these hospitals (in Liverpool) has been responsible in a material degree for the considerable and sustained prevalence of smallpox in Liverpool in 1902-3. Inhabited areas within a mile of each of the three Liverpool Hospitals (smallpox) have suffered more severely from smallpox than the city as a whole—exceptional incidence of the disease within these areas corresponding in point of time with the use of these particular hospitals for the treatment (and isolation) of acute smallpox cases. The dwellings nearer to Hospital have sustained a far heavier incidence of smallpox than those further away."

Dr. Hope denies this strenuously, in a counter Report, and a wordy warfare, and many official letters, have resulted in consequence. The practical point that appears to be forgotten is that smallpox hospitals may be, generally are, a danger to surrounding houses, and should not, therefore, be allowed in crowded localities of towns. This is a public health axiom about which there can be no difference of opinion. What there can be a difference of opinion about is as to the real cause of the danger of such hospitals—aërial convection or mal-administration. The true answer is, probably, to be found in both these conditions, and the Local Government Board official attitude is the wisest under the circumstances. On the other hand, the official dispute between the Liverpool Corporation and the Local Government Board is to be regretted—at least, the form it has taken.

The Epidemiological Society has also during 1905 discussed the subject of aërial convection, but without arriving at any definite results.

ALCOHOLISM AND PHYSICAL DETERIORATION.

A new departure has been made recently by several of the Metropolitan Sanitary Authorities, and followed by several provincial towns, in placarding their respective districts with posters, upon which are set forth the evils arising from taking alcohol in excess. The evil effects of alcohol (taken in excess) are so well-known that, if anything can be

done to lessen them, no endeavour should be spared by a Sanitary Authority. The placarding of posters throughout a district is, therefore, commendable.

The following is the poster circulated throughout the Borough of Lambeth, and its wording will serve as a type of what is being done in other districts :—

PHYSICAL DETERIORATION AND ALCOHOLISM.

The Report of the Committee, presented to Parliament by command of His Majesty, shows that :—

The abuse of alcoholic stimulants is a most potent and deadly agent of physical deterioration, and leads to degenerative changes in most, if not in all, of the organs of the body, ending in mental and physical disease, and finally in death.

Alcoholic persons are specially liable to syphilis and tuberculosis, and also to all forms of inflammatory disorders ; whilst, as a rule, they suffer much longer, and more severely, from the effects of any malady than the temperate do.

Evidence was placed before the Committee, showing that in abstinence is to be sought a source of muscular vigour and dexterity.

The lunacy figures show a large, and, in some cases, an increasing number of admissions into asylums of both sexes, which are due to drink, and an increase of general paralysis amongst lunacy patients due to the same cause.

The following facts recognized by the medical profession are published in order to carry out the recommendations of the Committee, and to bring home to men and women the fatal effects of alcoholism on physical efficiency :—

1. Alcoholism is a chronic poisoning, resulting from the habitual use in excess, or abuse, of alcohol (whether in the form of spirits, wine, or beer), even though such habitual use, or abuse, does not produce drunkenness.

2. Spirits (taken in excess) rapidly produce a state of alcoholism, but even the milder alcoholic drinks, such as beer, light wines, etc., will, under similar conditions, produce with equal certainty, the same results after a time ; it is merely a difference of dose.

3. For healthy adults, alcohol, in any form, presents no advantages ; whilst for healthy children it is decidedly injurious, and should in no case be given, except by order of a medical practitioner.

4. It is a mistake to say that alcohol is necessary, even for those doing hard mental or bodily work, as the stimulation (or artificial strength), which it produces, soon gives place to nervous depression and weakness ; hard work can usually be done better without alcohol.

5. Alcohol (taken in excess) is a narcotic, dulling the nerves like laudanum or other forms of opium ; and its first effect is to weaken self-control and to excite the passions, ending afterwards in muscular weakness and insensibility.

6. The habit of drinking to excess leads to the ruin of families, the neglect of social duties, immorality, disgust for work, degradation, misery, poverty, theft, suicide, crime, and death.

7. Alcohol (taken in excess) produces the most various and fatal diseases, including paralysis and even insanity ; diseases of the stomach and liver, heart and blood vessels, kidneys and other organs ; and dropsy. It also paves the way for consumption, as shown by the fact that the habitual frequenters of public houses furnish a large proportion of the victims of this disease. It complicates and aggravates all acute diseases ; whilst typhoid fever, pneumonia, erysipelas and accidents are specially fatal to persons weakened by alcoholic excess, and in whom the resistance to disease is thereby lessened.

8. The sins of alcoholic parents are often visited upon the children in the form of paralysis, epilepsy, idiocy, or other brain troubles, by which such children are permanently disabled, if not killed outright.

9. In short, alcoholism is the most terrible enemy to personal health, to family happiness, and to national prosperity, and even to the future of the race.

By order of the Council,

J. PRIESTLEY, B.A., M.D., D.P.H.,
(*Medical Officer of Health*).

Town Hall, Kennington,
September, 1905.

A section of the Trade has taken exception to the posters being placarded through districts by the Sanitary Authorities concerned, and, relying upon counsel's opinion (that of Mr. MacMorran, K.C.) to the effect that such action is not the duty of a Sanitary Authority under the Public Health Acts, has given formal notice that the expenses connected therewith (and paid for out of the rates) will be opposed before the official auditors with a view to surcharge.

CEREBRO-SPINAL MENINGITIS.

The 1905 epidemics of cerebro-spinal meningitis in New York and in Silesia and Galicia (and the sprinkling of sporadic cases elsewhere) have drawn attention to the disease, which has been regarded as a distinct epidemic disease since Vieusseux described the 1805 Geneva outbreak. America has been the chief sufferer from the disease since that date.

The germ is the diplococcus intracellularis meningitidis (described in 1887 by Weichselbaum, and since confirmed by Councilman, Osler, and others), and appears to gain entrance into the brain by the nasal, auditory, or other passages. The disease is not directly contagious from person to person, neither is it transmitted by clothing or the excretions; and though occasionally it takes on epidemic proportions, isolated cases of cerebro-spinal meningitis (in which Weichselbaum's organism is found) are not uncommon all over the world. Specific cerebro-spinal meningitis is a separate and distinct type of the disease, and may have to be combated (as recently in America) by the usual preventive measures adopted in connection with the better known infectious diseases. The name "spotted fever" is somewhat of a misnomer, as the petechiæ (sometimes found) are by no means constant, nor even well-marked when present.

The Local Government Board issued in August, 1905, a circular letter to the different Sanitary Authorities, dealing with the subject in a memorandum drawn up by the Board's medical officer, from which it appears that the disease is at the present time not more prevalent in this country than it has been from time to time during the last twenty-five years. The disease presents itself at times in varied and anomalous forms, rendering diagnosis difficult.

The usual precautionary measures are suggested, viz., notification, isolation, and disinfection.

DRAIN-TESTING.

The question of the testing of drains has been brought prominently forward in London during 1905 by the action of the London County Council in testing with water the drains of all the London non-provided

schools. Apart from the doubts in the minds of some as to whether the sanitary inspection of schools should rest with the County Authority (as the Educational Authority) or with the Metropolitan Cities and Boroughs (as the Sanitary Authorities), the real question at issue is the nature of the test employed, viz., the hydraulic or water test, to old drains. All sanitarians are agreed that this test is a severe one, and ought not to be used indiscriminately—at least, not in the case of old drains—and certainly not without the knowledge and consent of the owners of the drains involved. The other drain tests, at present in use in an ordinary way, are less severe, though, in the opinion of some, not so reliable. These tests are known as (*a*) The smoke: (*b*) The chemical (or odour); and (*c*) The pneumatic.

EXCLUSION FROM PUBLIC ELEMENTARY SCHOOLS OF CHILDREN UNDER FIVE YEARS OF AGE.

By a recent (1905) decision of the Board of Education, local Education Authorities are no longer compelled to provide school places for children under the age of five years, the age at which compulsory attendance begins (*vide* Compulsory Education Acts).

That the work of children under the age of five years is of small educational value is shown in the Reports of the Board of Education's Women Inspectors which have been published during 1905. It has, also, long been known to Medical Officers of Health that such diseases as measles and whooping cough are spread considerably by infants' schools, and that many children under five years of age, in consequence, die, or are maimed in health for life. It appears that the conditions under which the infants crowd together in school rooms predispose to the spread amongst the scholars of the well-known infantile infectious diseases. Dr. Hyslop, senior physician to the Bethlem Royal Hospital, has recently emphasized, too, what he calls "Brain fag in children"—a result of attempting to cultivate soil, which is incapable of cultivation. The brains of children under five years of age are not capable of standing the mental strain of so-called educational methods, more especially learning by rote—one of the most vicious causes of brain-fag, due to present-day school competition. The object should not be to make the mind a mere receptacle for knowledge.

It is a significant fact that the numbers of certified lunatics are rising rapidly from 1 in 536 to 1 in 288 of the population, during the last fifty years.

The question naturally arises as to what is to become of the infants and children under five years excluded from schools? Those of better class people would be accommodated at their own homes, but, in the case of the poor, municipal *crèches* would be required. Without such municipal crèches, the wholesale exclusion of children under five years from the public elementary schools would prove of doubtful advantage from a public health point of view. The subject is beset with practical difficulties, which are, at present, preventing the Educational Board from acting expeditiously in the matter.

INFANTS' MILK DEPÔTS.

The question of Infants' Milk Depôts is still being much discussed, and the importance of their establishment by municipal authorities is being more and more acknowledged. The Lambeth Borough Council,

in London, has, during 1905, opened one, designed and fitted up in accordance with modern ideas: the premises used for the manipulation and modification (special preparation) of the milk being sanitarily ideal, and the milk being obtained from a farm, situated near to London and kept under constant sanitary and veterinary inspection. The cows are carefully fed, and regularly groomed before milking. The milk mixture is, as required, pasteurized, not sterilized, so that the nutritive quality of the milk is not impaired.

If only as educational centres, such depôts are of great value, educating, on the one hand, mothers in the proper feeding of infants, and, on the other hand, milk purveyors (and the people generally) in the importance of a clean and wholesome milk supply. Milk cannot be too clean: and, to secure such cleanliness, every possible effort should be made by a Sanitary Authority. Indeed, the idea of the municipalization of the milk supply is gaining ground, so that the milk may be carefully watched, sanitarily, from cow to consumer.

Infantile mortality is still rampant, and anything that a Sanitary Authority can do to lessen it should be done. A right step in this direction is the establishment of milk depôts for infants and children, and the results obtained from those already established, more especially in Liverpool, Glasgow, and Battersea, are highly satisfactory. It is not to be expected that milk depôts can be run at a profit to the ratepayers, the milk being sold at, or under, cost price. The infants and children catered for should be kept under strict medical supervision, and careful statistics recorded.

The publication of the Report of the Inter-departmental Committee on the Physical Deterioration of the People is responsible for the increased attention that is being given to the enormous waste of infant life (put down at 140,000 per annum in England and Wales), and the unsatisfactory physical condition of school children at the present day. The steady decline in the birth-rate from year to year is noted also in this connection.

The Conference held in Paris during October, 1905, was the means of emphasizing the French method of infant feeding—the so-called *Gouttes de lait*—on the basis of which the English milk depôts have practically been established. France is of opinion that such a method of feeding infants will considerably lessen infantile mortality.

MEDICAL INSPECTION OF SCHOOL CHILDREN.

Much attention has been drawn during 1905 to the importance of the systematic medical inspection of school children. This is to be explained by the Report of the Departmental Committee on Physical Degeneration. The system was first put into force at Brussels about 1875, and the most perfect system appears to be that at present in vogue at Boston, in the United States. At Boston, the medical inspection is a daily one, and children unfit to attend school, from whatever cause, are excluded, and only again re-admitted after examination by the medical inspector. In this way, acute specific infectious diseases are discovered in the earliest stages, and much illness, and interruption of school attendance, thereby avoided. Skin diseases (including dirty heads), eye, throat, mouth and chest diseases, astigmatism and deafness, etc., account for the exclusion of the majority of the children from school, according to the Boston statistics

The need for such a medical (daily) inspection of all school children is acknowledged by all having experience of school life, not only in the way shown by actual statistics from Boston, but also, having regard to the importance of weeding out children who are more or less unfit to derive full benefit from the education offered by virtue of their physical, underfed, or crippled condition, or of their inferior intellectual capacity (mentally-defective states).

Bound up with the question of medical inspection for school children is the larger one of school sanitation or hygiene, in connection with which a conference was held at the University of London during 1905. School hours, home lessons, recreation, drilling, feeding of school children, construction of schools generally, ventilation, and lighting were all subjects dealt with; whilst special attention was devoted to hours of sleep needed for growing school children, the public schools being specially condemned for the shortness of the time allowed in this respect.

The subject of the hygienic training of teachers and candidates in training colleges has also been brought forward by the Society of Medical Officers of Health, and a series of suggestions published to medical men for lectures on hygiene with special reference to school life.

"RETURN" CASES OF SCARLET FEVER AND DIPHTHERIA.

Dr. A. G. R. Cameron, on behalf of the Metropolitan Asylums Board, has published during the year an important and extensive Report on the subject of "return" cases of scarlet fever and diphtheria, restricting the term "return" to those cases that are infected, or alleged to be infected, at home (or elsewhere) by a patient who returns from hospital. The total number of investigations made amounts to 900. Of the total number of scarlet fever patients discharged from hospitals, 4·1 per cent are described as "infecting cases," i.e., patients who infected, or are alleged to have infected, others at home or elsewhere; 46 per cent appeared to cause "return cases," chiefly from November to April. The mortality of the "return cases" was 5·8 per cent. The conclusions arrived at by Dr. Cameron as to scarlet fever are: (1) No laxity of administration in discharging cases; (2) Need for more extended means of isolation than at present obtains.

The statistics of diphtheria show that 1·2 per cent of the discharges were infecting cases, and of these 30 per cent appeared to be the cause of the "return cases." The conclusions as to diphtheria are the same as those given for scarlet fever.

SANATORIA FOR CONSUMPTIVES.

The need for sanatoria for consumptives has been again emphasized (during 1905) in connection with a deputation to the Metropolitan Asylums Board, which was organized by the Metropolitan Medical Officers of Health Society, and joined by many other influential Societies and Organizations.

The memorial of the deputation sets out fully the reasons why it is necessary that sanatoria for consumptives should be provided for Metropolitan consumptives, and what applies to London applies also to all other large centres of population.

The terms of the memorial are as follow:—

Showeth :—

1. That between 7,000 and 8,000 persons (of whom the large majority are adults in the prime of life) die every year in London from pulmonary phthisis (consumption), the mortality in the male sex being some 40 per cent greater than in the female sex; and that a much larger number of persons (also chiefly adults) suffers from ill health arising from the same disease.

2. That great loss accrues to the community from these deaths, and this morbidity, from pulmonary phthisis (consumption), and many deaths, and much illness, and suffering might be prevented, were hospitals provided for the treatment of this disease.

3. That persons suffering from pulmonary phthisis (consumption) may be divided, roughly, into two classes: (1) Those in the primary stage of the disease which is curable and not specially infectious; and (2) Those in the chronic stage of the disease, which is incurable and very infectious.

4. That for those in the primary stage of the disease, hospitals are required wherein the patients may be treated with a view to cure, and for those in the chronic stage, refuges wherein the patients may be isolated so as to be prevented from spreading the disease to others.

5. That the present (existing) provision of hospitals for pulmonary phthisis (consumption) in London is totally inadequate, and that, in connection with such provision as there is, great difficulty (and consequent delay) is experienced in obtaining admittance thereto, more especially when, as usually is the case, the "letter" system prevails, rendering it necessary for patients not only to have to wait long for their turn, and so lose the advantage of special and valuable treatment in the early stage of the disease, but also to find that, when admitted, they are rarely kept in hospital long enough to obtain a cure.

6. That the pressing need for the moment is the provision of a hospital or hospitals in the country for the treatment of persons in the acute and curable stage of the disease.

7. That, having regard to the provision now made, or which could be made in separate wards, at the various Poor Law Infirmaries, the chronic cases might, for the present at any rate, be kept in town where they could be visited by their friends.

8. That the need for sanatoria arises from the fact that it is practically impossible to treat poor persons in their own homes, or in Poor Law Infirmaries, in London with any reasonable hope of cure.

9. That the great bulk of the cases occur amongst the poor, and the poorest classes of the people, who are unable to make any contribution towards the expenses incident to sanatorium treatment.

[N.B.—In 1899 (the only year for which reliable statistics are available) a third of the deaths in London from pulmonary phthisis (consumption) occurred in Poor Law Institutions. Many of these sufferers might have been cured could they have obtained sanatorium treatment at the beginning of their illnesses, and a large amount of poverty and charge on the rates have been, thereby, avoided. It is well known that many persons reduced by consumption to a state of poverty drift into the workhouse, and become a permanent charge upon the rates, often leaving widows and orphans in a state of destitution, whereas many such persons might be cured if sanatorium treatment were made available for them in the early stages of their diseases.]

10. That, whilst the deaths in London in 1904 from the diseases admissible to the Board's hospitals (small-pox, scarlet fever, diphtheria, and fever) aggregated only 1,415, of which 1,094 were due to scarlet fever and diphtheria (upwards of 90 per cent being deaths of children under the age of five years), the deaths from pulmonary phthisis (consumption) alone, and exclusive of all other tubercular diseases, were 7,738 in number, and of these, a vast proportion were deaths of adult men and women (more especially men in the prime of life).

11. That the money value to the community of the lives lost every year from this preventable and curable disease, is enormous, and immensely transcends any possible cost to the rates by sanatorium provision.

Your Memorialists, having given all these points consideration, and believing that it would be in the best interests of the community, earnestly pray the managers to take necessary steps, as they may think desirable, forthwith ; and respectfully suggest the following :—

1. That an order of the Local Government Board be obtained to make Section 5 of the Metropolitan Poor Act 1867, applicable to the case of " poor persons" suffering from pulmonary phthisis (consumption); and, if necessary,

2. That an Act be obtained to make the provisions of Section 80 of the Public Health (London) Act 1891, applicable to pulmonary phthisis (consumption), as if such disease were therein mentioned as well as " fever, or small-pox, or diphtheria."

And your Memorialists will ever pray, etc.

Signed, on behalf of the Metropolitan Branch of the Incorporated Society of Medical Officers of Health,

JOSEPH PRIESTLEY. M.D., D.P.H.,
(*Hon. Secretary*).

SEWER VENTILATION AND INTERCEPTING TRAPS.

The suggestion to abolish intercepting traps in house drains has reappeared during 1905, and a long discussion on the subject followed in the Press. In the case of London such a suggestion would necessitate the repealing of the London County Council Drainage Byelaw, dealing with the compulsory provision of intercepting traps.

Sewer *gas* and sewer *air* must be distinguished the one from the other—the former consisting of organic and other gases (the result of putrefactive and decomposing changes in the stagnant contents of the sewers), and the latter of practically atmospheric air (which has simply gained access into the sewers). There is no difference of opinion amongst experts as to the deleterious and dangerous properties of sewer *gas*, at times and under certain conditions. In sewers of deposit, which are simply elongated underground cesspools, the deleterious and dangerous gases are generated in excess, and may prove a danger to health, by causing nausea, vomiting, diarrhœa, sore throats, headaches, and general malaise, and by lowering of vitality. Against these gases the inmates of houses should be protected, and this can be accomplished in great part by disconnecting all the house drains from such sewers, by the provision of suitable, efficient, and properly constructed intercepting traps. These intercepting traps may not be unmixed blessings—may not be ideal sanitary appliances—but choice must be made between two evils, viz., having sewer *gas* (with all its danger) laid on to the houses, or having the efficiency of the house drains somewhat interfered with. The latter is the lesser evil.

The questions of ventilating (*a*) sewers, and (*b*) drains, are distinct the one from the other, and should be kept so. The ventilation of sewers rests with the Sanitary Authorities under the Public Health Acts ; that of drains, with private owners. Any attempt to ventilate sewers by, and through, house drains must result disastrously, and be a danger to health.

As to the best method of ventilating sewers, there are no recent suggestions. All are agreed that their ventilation is absolutely

necessary—the freer, the better. The means that are at present available are ; (1) Open gratings, at the level of roads : and (2) Outlet ventilating shafts, taken high up into the air : the former to be of sufficient numbers, and the latter of sufficient calibre, together with sufficient and efficient flushing arrangements.

SHELLFISH AND THE VITALITY OF THE TYPHOID BACILLUS.

Dr. Klein has recently published an important Report dealing with bacteriological experiments as to the length of time that shellfish, artificially typhoid-infected, will retain the germ. Oysters, cockles, and mussels were used in the experiments, and the conclusions arrived at may be tabulated as follow :—

1. Shellfish readily take up into their interiors the bacilli of typhoid.
2. Oysters rapidly clean themselves of the ingested bacilli if kept in clean sea water, frequently changed, but not if kept "dry."
3. Polluted oysters "clean" less quickly than clean oysters, when experimentally infected.
4. Cockles lose their typhoid germs very slowly compared with oysters : whilst mussels "clean" more quickly than cockles, but less quickly than oysters.
5. There is an inherent power of the oyster to directly devitalize the typhoid germ.

It is well to remember that, in normal oysters, there is often present an organism very like the typhoid bacillus (growing only in the cold), and this has undoubtedly at times been mistaken and blamed for causing typhoid fever.

THE TUBERCULOSIS CONGRESS IN PARIS.

The International Congress on Tuberculosis was held in Paris during October, 1905, and was largely attended by delegates (and others) from different countries.

The Congress was divided into four sections : (1) Medical pathology : (2) Surgical pathology : (3) Children (preservation and assistance of) : (4) Social aspects of tuberculosis.

There was also an exhibition, including a museum of excellent specimens of tuberculosis (pathological and bacteriological), and of descriptions of sanatoria.

Nothing new transpired at the Congress, but the known facts were emphasized, viz., the bacterial cause of the disease, the channels by which it spreads, the part played by susceptibility or heredity, preventive measures (including the open-air treatment of sanatoria), etc.

An item of sensationalism was provided at the end of the Congress by an announcement that Prof. von Behring had discovered a "cure" for tuberculosis on the lines of immunization (active and passive) by anti-bodies. Nothing definite, nothing scientifically satisfactory, was forthcoming, however.

Much attention was given in the section dealing with the social aspects of tuberculosis to the part that insurance companies and mutual benefit societies might take in connection with the prevention of tuberculosis. It was shown that some of the funds belonging to such companies and societies might, with advantage to all concerned, be devoted to the curative treatment of their consumptive members, as

well as to the promotion of preventive measures through their various agents. A resolution was passed advocating a system of workmen's insurance, to which the workmen and their employers (and the State itself) should contribute, on the lines of the present German system.

TYPHOID FEVER AND ITS PREVENTION.

An object-lesson has been offered during 1905 by the town of Lincoln, of the dangers of water supplies which may become specifically infected with typhoid: 2 per cent of the population were notified as suffering from typhoid, and 0·2 per cent were registered as having died from the same disease. Of the 1021 cases notified, 120 died, giving a case mortality of 11·7 per cent. Lincoln had suffered from a previous typhoid epidemic in 1879, when there were registered 39 deaths out of a (then) estimated population of 30,000. From 1879 to 1905 the typhoid incidence was slight.

During the 1905 epidemic the first dropping cases were notified from the end of Dec. 1904 to the end of January 1905, when there was an extensive and explosive outburst, which continued to the end of February, rapidly declining from then, and ceasing entirely in July. Allowing an incubation period of two weeks for typhoid, and an extra week for the difficulties and delay in arriving at a diagnosis, it would appear that the greatest infection occurred during the first three weeks of Jan. 1905—the first (lesser) infection extending over the first two weeks of Dec. 1904. The cases were scattered throughout the Town, and not localized in any particular district or area.

The details of the epidemic have been fully investigated by several independent experts, all of whom agree that the cause of the epidemic was a typhoid-infected water supply. The town's water supply was drawn chiefly from the River Witham and its two tributaries, the Pik and Catchwater. These are three sluggish streams, polluted with (*a*) human and animal excreta from adjacent homesteads and villages; (*b*) surface and subsoil drainage of fields manured with human excreta; (*c*) effluents from sewage farms of Grantham (a neighbouring town), and a large County Lunatic Asylum.

The water is filtered through sand, which, for many years, had proved efficacious, but which appears, during 1904-5, to have broken down from over-use, neglect, or other cause. It was noted that those who boiled their water, or filtered it privately at home through an efficient filter such as a Pasteur, escaped infection, as did also those Institutions whose inmates did not use the town's water supply without previously passing it through a similarly efficient filter.

Of the total 1021 cases notified, nearly half were secondary cases, i.e., persons infected directly or indirectly from previous typhoid patients. This infection from person to person in typhoid is commoner than is generally supposed—a fact that has been specially emphasized in the Lincoln outbreak, and which has also been stated recently by Dr. Goodall, who quotes in support the Metropolitan Asylums Board's Hospital Statistics, extending over a period of eight years, to the effect that, of 5913 cases, 100 were members of staff who had been infected personally from patients suffering from the disease.

LEGAL DECISIONS

AFFECTING MEDICAL MEN AND THE PUBLIC HEALTH.

By JOSEPH PRIESTLEY, B.A., M.D., D.P.H.,

Medical Officer of Health, Borough of Lambeth, London.

ADULTERATION OF FOOD AND DRUGS.

BAYLEY *v.* COOK (King's Bench Division).

Sale of Food and Drugs Acts, 1899, s. 4—*Milk Regulations*, 1901. (1)—*Analyst's Certificate without Statement of Standard.*

Milk deficient in fat to the extent of 53·4 per cent was certified in the usual way by an Analyst, who failed to state, on his certificate, the standard on which the result was based. The certificate was as follows:—"I am of opinion that the sample contained parts as under—milk fat 1·4 per cent, milk solids not fat 5·6 per cent. Observations—This milk is deficient in milk solids to the extent of 2·9 per cent, which is equivalent to the addition of 34·2 per cent of water. It is also deficient in milk fat to the extent of 53·4 per cent of milk fat."

Held, That the Analyst's certificate sufficiently showed, or was made with reference to, the standard laid down by the Milk Regulations, 1901, of the Board of Agriculture. *Appeal allowed.*

OATLEY *v.* LEMON (King's Bench Division).

Sale of Food and Drugs Acts, 1899, s. 20 (6)—*Milk Adulteration—False Warranty—Time when Warranty was given.*

A wholesale London dealer was summoned under s. 9 of the 1875 Act for selling adulterated milk, but claimed, in defence, a contract and warranty, and that he had duly complied with s. 25 of the 1875 Act and s. 20 (1) of the 1899 Act. The summons was dismissed by the magistrate, and a further summons was, consequently, taken out against the farmer for giving a false warranty under s. 20 (6) of the 1899 Act. The farmer proved that, at and from the handing over of the milk to the Railway Company in the country to the final delivery thereof in London, the statements in the warranty were true. The summons was, consequently, dismissed. There was an appeal to the High Court, and it was *held* that at the time when the warranty was given, the farmer had reason to believe that the statements or descriptions contained therein were true.

Appeal dismissed.

SANDYS *v.* JACKSON (King's Bench Division).

Sale of Food and Drugs Act, 1875, ss. 6, 13—*Sale of Food and Drugs Act Amendment Act*, 1879, s. 3—*Milk Adulteration—Sample Supplied from Churns—No Sale to Prejudice of the Purchaser.*

Adulterated milk (with at least 12 per cent of fat deficient) was

served on request to the Sanitary Inspector from the churns, the Inspector asking for a sample from the milk churns and not asking for a sample of pure milk. The Justices dismissed the summons, and an Appeal was lodged.

Held, That the Inspector obtained what he asked for, viz. a sample from the milk churns, and that, therefore, there could be no conviction of a sale to the prejudice of the purchaser under s. 6 of the 1875 Sale of Food and Drugs Act of adulterated milk,

SMITH *v.* SAVAGE (Divisional Court).

Sale of Food and Drugs Act, 1875, s. 14—*Purchase of Sample for Analysis—Mode of Dividing Sample.*

An Inspector asked for cream of tartar, and was presented with the offer of penny packets, contained in a box, which was labelled "cream of tartar." Four packets were purchased, opened, and the contents mixed and divided into three parts (the usual other formalities of the Act being then gone through). The cream of tartar being adulterated, a summons was issued and the Magistrate *convicted.*

Held, That the purchaser complied sufficiently with the requirements of s. 14 of the Food and Drugs Act, 1875. *Judgment for Plaintiff.*

WOLFENDEN *v.* MCCULLOCK (King's Bench Division).

Sale of Food and Drugs Act, 1875, s. 6—*Sale of Milk Regulations*, 1901—*Adulterated Milk—Deficiency in Fat—Natural Proportion of Fat in Ordinary Milk.*

A sample of milk purchased showed, on analysis, 2·81 per cent of fat. The 1901 Sale of Milk Regulations lay down "not less than 3 per cent of fat." A conviction followed under s. 6 of the Sale of Food and Drugs Act, 1875, although the Justices found that, as a fact, the milk was in the same condition as when it came from the cow. On appeal it was

Held, That there was no evidence that the milk was otherwise than of the nature, substance, and quality demanded by the purchaser, and that, therefore, there was no evidence upon which the conviction could be supported. *Appeal allowed.*

WORTHINGTON *v.* KYME (King's Bench Division).

Sale of Food and Drugs Acts, 1899, s. 25—*Information laid by a Borough Council which was not authorized to appoint an analyst—Local Authority.*

The Inspector of a Borough, which had neither a separate court of Quarter Sessions nor a separate police establishment, and was, therefore, not a "local authority" authorized to appoint an Analyst, took a sample and had it analyzed by the County analyst, and afterwards preferred an information against the vendor under s. 6 of the Food and Drugs Act, 1899. The justices would not hear the case on the ground that the Borough Council was not a "local authority." Against the justices' decision, there was an appeal,

Held, That the justices were wrong, and must hear and determine the summons. *Appeal allowed.*

PARKINSON *v.* MCNAIR (King's Bench Division).

Margarine Act, 1887, s. 6—*Margarine—Pyramid of Six Margarine Pats with One Label—One Parcel or Six.*

Six separate rounded pats of margarine were exposed for sale in a window, and were arranged as a pyramid. A label was placed at the foot of the pyramid. It was *held* by the justices that the six pats together formed one parcel, and that, therefore, the labelling was in accordance with the requirements of the Act. A case was stated for the High Court.

Held, That the decision of the justices was right. *Appeal dismissed.*

ROBERTS *v.* LEEMING (King's Bench Division).

Sale of Food and Drugs Act, 1875, s. 6—*Margarine Act*, 1887, s. 3—*Margarine—Standard of Margarine to be fixed by the Court.*

A sample of margarine was taken by an inspector, and showed, on analysis, 75·15 per cent of animal fat. A summons was taken out on the ground that the margarine was not of the nature, substance, and quality demanded, and was unlawfully sold to the prejudice of the purchaser. It was stated, in evidence, that the average of fat in margarine is about 85 per cent. The justices convicted and on appeal it was

Held, That as there is no statutory standard for margarine, the justices must fix for themselves a standard for margarine, based upon the evidence before them. *Appeal dismissed.*

BUILDINGS (Alterations of).

REDRUTH BREWERY COMPANY *v.* REDRUTH DISTRICT COUNCIL (Court of Appeal).

Public Health Act, 1875, ss. 157, 159—*Alteration of Old Buildings—New Buildings.*

Part of an old building (erected before the Local Government Acts came into force) was altered and re-erected. The justices held that such alteration and re-erection amounted to the erection of a new building. Against this decision there was an appeal.

Held, That, whether the re-erection of an old building amounts to the erection of a new building is a question of fact, and that s. 159 of the Public Health Act, 1875, is not an exhaustive enumeration of all the instances where the re-erection of an old building should be considered to be the erection of a new building. *Appeal dismissed.*

BYELAWS.

ROBINSON *v.* GREGORY (King's Bench Division).

Municipal Corporations Act, 1882, ss. 23, 24—*Byelaws—Publication—Proof—Production of Written Copy authenticated by Corporate Seal.*

A summons was taken out for contravention of a byelaw made by a Corporation of a Borough, and the prosecution produced a copy of the byelaws authenticated by the corporate seal. The respondent objected on the ground that there was no evidence of any publication of the said byelaw.

Held, That the production of a sealed copy of byelaws was *primâ facie* evidence of the operative existence of the byelaw, and that the conditions of the Statute as to making and publication had been duly complied with. *Appeal allowed.*

COMMON LODGING HOUSES.

GILBERT *v.* JONES (King's Bench Division).

Public Health—Common Lodging-houses—Implication of payment for Lodgings.

Held, That the word "lodging-house" does not necessarily imply the letting and hiring of lodgings for payment, and a house, where no payment of any kind direct or indirect is made by persons admitted thereto, may be a common lodging-house within the meaning of the Common Lodging Houses Acts, 1851–3, and Part IX of the London County Council (General Powers) Act, 1902. *Appeal allowed.*

DRAINAGE.

AGAR *v.* NOKES AND ANOTHER (King's Bench Division).

Byelaws of London County Council made under s. 202 *of the Metropolis Management Act*, 1855—*Nuisance—One Old Pipe and Gully Replaced—Four New Pipes and Gully—Reconstruction or Repair.*

Drain in a yard, taking slop-water from sink, was defective, and a notice duly served upon the owner, who opened up and took out four pipes and two gullies, replacing them by new ones. The new pipes were laid upon concrete, but the drain was not ventilated. The owner submitted no plan. Summonses were taken out on the ground that the work carried out was a "reconstruction" of the drain, and that, consequently, the byelaws of the London County Council had not been duly complied with. The magistrate dismissed the summonses, but a case was stated for the consideration of the High Court.

Held, That the owner had "reconstructed" the drain within the meaning of the byelaws. *Appeals allowed.*

DRAIN v. SEWER.

NATHAN *v.* ROUSE (King's Bench Division).

Public Health (*London*) *Act*, 1891, s. 120—*Combined Drain—Right of Contribution by Adjoining Owners or Occupiers—Drain Defective in Combined Portion.*

County Court Judge held that the costs of repairing a defective combined portion of drain, which was situated on the premises of A, belonged to A, although the drainage of the next house (in the occupancy of B) passed through the combined portion—there being no evidence to show that B was liable to repair the drain on A's premises, or that the nuisance, which existed on A's premises, was caused by any act or default of B.

Held, That the mere sending of sewage by B through A's defective drain (combined portion) did not render B liable to contribute towards

the expenses under s. 120 of the Public Health (London) Act. 1891—B not being the person by whose act and default the nuisance on A's premises was caused. *Appeal dismissed.*

JACKSON *v.* WIMBLEDON URBAN DISTRICT COUNCIL.

(Court of Appeal).

Public Health Act, 1875, ss. 4, 41—*Public Health Acts Amendment Act*, 1890, s. 19 (1)—*Drain—Sewer—Single Private Drain—Pipe Draining Several Houses in a Row the Property of One Owner—Connection with Sewer by Single Private Drain—Liability for Repair.*

A combined drain at the rear of 12 houses in a crescent (all the houses belonging to one owner) joins the sewer in the roadway in front by a branch drain, into which also four other houses in the same crescent (belonging to other owners) drain. The combined drain at the rear was defective as was also the branch drain to the sewer, and the combined drain being connected with 12 houses (though the property of one owner) was held to be a private drain by the Sanitary Authority. The Divisional Court held that such combined drain was a sewer. The Sanitary Authority appealed.

Held, That the decision of the Divisional Court was correct, and that the common drain at the rear of the 12 houses in a crescent (though all the houses belonged to one owner) was a sewer. *Appeal dismissed.*

WOOD GREEN URBAN DISTRICT COUNCIL *v.* JOSEPH

(King's Bench Division).

Public Health Acts Amendment Act, 1890, s. 19—*Pipe draining Houses of more than One Owner on Private Ground—Drainage of Houses entering Pipe by "Sewers."*

Sixteen houses were drained by a common drain, and six of the houses belonged to one owner and the rest to other owners. The houses were, further, drained in pairs, the common pipe to each pair being a sewer within the meaning of the Public Health Act, and not coming within the operation of s. 19 of the Public Health Acts Amendment Act, 1890, inasmuch as each two houses they served belonged to the same owner.

Held, That the pipe in question draining the sixteen houses was not a single private drain but a sewer. *Appeal dismissed.*

INFECTIOUS DISEASES.

EVANS *v.* CORPORATION OF LIVERPOOL (King's Bench Division).

Infectious Disease—Negligence—City Hospital—Position of Visiting Physician—Obligation of Local Authority.

Scarlet fever patient (infant) was discharged from hospital in infectious state, and communicated the disease to his brothers. On hearing the case, the jury found that there was a want of due skill and care in the discharge of the patient, that there was an undertaking by the Corporation to the father that their visiting physician should act with reasonable skill and care in treating the patient.

Held, That there was no evidence upon which the jury could find that such an undertaking existed—the obligation undertaken by a local authority in carrying on the business of a hospital being only that they will carry it on with all reasonable skill and care, and that the patients, whilst in hospital, shall receive competent medical advice and assistance. *Judgment for Defendants.*

LANDLORD AND TENANT.

HORNER *v.* FRANKLIN AND ANOTHER.

Factory and Workshop Act, 1891, s. 7 (2)—*Outgoings include the Provision of Means of Escape from Fire—Any Claim by a Tenant against a Landlord must be heard in County Court.*

A factory was leased for a term of years—the lease containing a covenant to pay all "outgoings" by the lessees. The London County Council called upon the landlord by s. 7 (2) of the Factory and Workshop Act, 1891, to provide proper means of escape in case of fire, and the landlord sued in the High Court to recover the expenses connected therewith from the lessees, but the judge held that the County Court was the Court in which to sue.

Held, That the landlord can only sue in the County Court under s. 7 of the 1891 Factory and Workshop Act, and that the High Court judge's judgment was right and should be affirmed.

Appeal dismissed.

PUBLIC CONVENIENCES.

WESTMINSTER CORPORATION *v.* LONDON & NORTH WESTERN RAILWAY COMPANY (House of Lords).

Public Health (London) Act, 1891, s. 44—*Public Conveniences—Approaches—Subway.*

This was a case in which the House of Lords reversed the decision of the Court of Appeal.

Held, That, where a sanitary authority acts *bonâ fide* and reasonably, under the Public Health (London) Act, 1891, s. 44, in providing public conveniences, their discretion as to the mode of acting will not be interfered with; and that the mere provision in connection with such conveniences of a subway capable of being used as a thoroughfare under a crowded street is not evidence of bad faith or of unreasonableness. *Appeal allowed.*

SALE OF GOODS.

FROST *v.* AYLESBURY DAIRY COMPANY (Court of Appeal).

Sale of Goods Act, 1893, s. 14 (1)—*Purpose for which Goods are supplied—Reliance on Seller's Skill—Milk Required for Consumption—Implied Warranty of Fitness.*

Milk was sold, and caused typhoid in a consumer. The sellers advertised, in print, the precautions taken to supply the milk pure and unadulterated, and free from germs of disease.

Held, That the purpose for which the milk was supplied was sufficiently made known to the sellers by the advertisement, and that

the buyer relied on the seller's skill, and that there was an implied condition under the Act that the milk was reasonably fit for consumption although the defect was not discoverable at the time of sale.

Judgment for Plaintiff.

UNDERGROUND BAKEHOUSES.

STUCKEY AND OTHERS *v.* HOOKE.

Factory and Workshop Act, 1901, s. 101—*Underground Bakehouses—Expenses of Alterations (Structural)—Order of Apportionment—Work Done by Landlord who Counterclaimed from the Tenant under a Covenant for all Impositions.*

Premises let on lease with a covenant by tenant "to bear, pay and discharge all burdens, duties, assessments, outgoings, and impositions whatsoever," etc. Certain structural alterations were required to the premises (underground bakehouse) under s. 101 of the Factory and Workshop Act, 1901. The magistrate appointed that the total estimated expenses, £200, should be divided between the landlord and tenant in the respective proportion of £150 to £50. The actual cost was £177 10s. 0d., and the work having been done by the landlord, a counterclaim was entered in the High Court for the whole sum from the tenant, who admitted liability only to the extent of the magistrate's apportionment, viz. £50.

Held, That the High Court has jurisdiction, although an order apportioning the expenses between landlord and tenant has been already made by a magistrate under s. 101 (8) of the Factory and Workshop Act, 1901, and that, in the case mentioned, the whole of the expenses must be borne by the tenant who has covenanted to discharge all "impositions." *Appeal allowed.*

UNSOUND MEAT.

FIRTH *v.* MCPHAIL (King's Bench Division).

Public Health Acts Amendment Act, 1890, s. 28—*Public Health Act*, 1875, ss. 116, 117—*Unsound Meat—"Exposure for Sale."*

A diseased carcase of a cow (belonging to one person) was deposited on the premises of another person, a meat salesman, and was there seized by a sanitary inspector, and subsequently condemned by the magistrate who convicted, and on appeal it was

Held, That there had been no exposure for sale, but only a deposit for purposes of sale upon premises other than those of the appellant, and that, therefore, there could be no conviction under s. 117 of the Public Health Act, 1875, which was not affected by s. 28 of the Public Health Act Amendment Act, 1890, and that the conviction must be quashed. *Appeal allowed.*

THE EDITOR'S TABLE.

In this section we endeavour to bring before our readers the work that is being done by inventors, and the manufacturers on their behalf.

All that we ask of the manufacturers is that a sample of the production, together with a description and illustration (if necessary) should reach us by November. We experience some difficulty in obtaining compliance with these simple and necessary conditions, and trust that our friends will recognize that the insistence upon them is unavoidable.

In respect to Pharmaceutical Products and Dietetic Articles, we are always ready when a sufficient quantity is sent to us *early in the year*, to arrange for it to be tested in Hospital practice and reported upon; under other circumstances our knowledge is necessarily more limited; but frequently the simple information as to where a particular preparation can be obtained is all the practitioner requires. We are anxious to express no opinion except as a result of practical knowledge, and it is to this fact that a notice in the *Medical Annual* has come to be valued. If we departed from the principles which have guided us since the first volume of the *Annual* was published, we should forfeit a position which enables us to be of some use both to the practitioner and the manufacturer.

MEDICAL AND SURGICAL APPLIANCES.

Annular Herniotomy Forceps.—These forceps (*Fig. 71*) have been designed by Mr. J. Collingwood Stewart, M.B., B.S., of Newcastle-on-Tyne, for holding up the spermatic cord while suturing the ring in the operation for the radical cure of hernia. He considers the blunt hook commonly used is inadequate to hold all the structures of the cord, and besides, it needs to be held up all the time in order to keep it in position. The forceps will hold up any cord, and the structures being enclosed in the ring-shaped jaws, it is impossible for them to slip off. They are made by Messrs. Down Bros., Ltd., London.

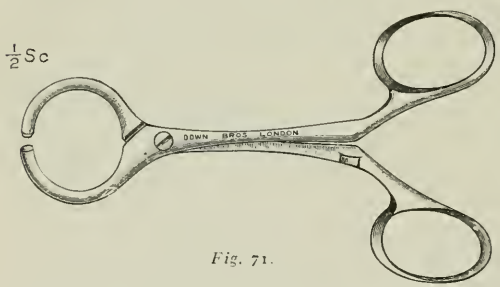

Fig. 71.

Aseptic Ligature Silk Holder.—This is an ingenious arrangement by which two bottles of silk in antiseptic solution are screwed into a metal socket for convenience of carriage. It is quite the most convenient way

Fig. 72.

of carrying ligatures in the pocket-case that we have seen. The cost is 2/9, and fresh bottles are supplied as required at 1/3 each. Messrs. R. Sumner & Co., Liverpool, supply these (*Fig. 72*).

Fig. 73.

"Back-bone" Corset.—For girls with weak backs, who stoop and loll about, and who tend to round shoulders, this corset (*Fig. 73*) is the most practical thing we have seen, and those who use it find it very comfortable. Not that we think a corset is a cure for weak-backed girls. The cure must depend upon active physical exercise

without corsets being on at all, but during the rest of the day it is necessary to prevent the *habit* of stooping, which is often half the difficulty in such cases. We notice that the corset is well ventilated and excellently designed. It is made by the "Domen" Belts Co., 456, Strand, W.C., and may be seen at any of the depôts of the Jaeger Co.

Bandages (The "Puttee" Leg Bandage).—The question of elastic bandages for varicose veins frequently crops up in out-patient practice, and a cheap and efficient support, which can be self-applied, is a desideratum.

The "Puttee" bandages are made of elastic (cotton covered) and have a loop for the foot, making their application easy and enabling the position to be retained. The pressure can be adjusted by the patient, which is an advantage this form of bandage has over the elastic stocking. They are made in two sizes, 9ft. by 2¼ins. to reach the knee, and 12ft. by 2¼ins. when the thigh has to be supported. They cost 2/- and 3/- each respectively, and can be procured from Messrs. R. Sumner & Co., of Liverpool (*Fig.* 74).

Fig. 74.

For Compressed Bandages *see* article "Surgical Dressings."

Centrifuge (The "Perplex" Hand).—A specimen of urine formerly required to be put aside for twenty-four hours, before the deposit could be examined. The same was true of other precipitates. Now by means of the centrifuge it is easy to obtain the precipitate from a solution within three minutes. But these appliances have not obtained the place they should hold in the ordinary consulting room because they were unnecessarily expensive, yet we have never seen one better made than the "Perplex," which Messrs. R. Sumner & Co., of Liverpool, supply at 21/-. It is furnished with aluminium tubes to hold the test-tubes, and these test-tubes are made conical at the end and graduated so that the deposit may be measured in bulk and a rough estimate made of the comparative volume of precipitates at various times. There can be no question that the centrifuge is a most valuable aid to clinical observations, and enables an examination to be made and a report given immediately which would otherwise be impossible without a delay of twenty-four hours; and now an efficient appliance can be purchased at so little cost we expect most practitioners will be ready to avail themselves of its aid.

We are always grateful to those who offer us scientific instruments at a moderate cost, as it unquestionably aids the habit of accuracy and observation when such appliances are available.

Clinical Thermometers.—In hospitals where the life of thermometers is usually short, the cost of a reliable instrument is a matter of importance. Messrs. Ferris and Co. produce an English made thermometer at 1/6, or 15 - the dozen, but these take five minutes to register. The "one-minute" are 3d. more, and the "half-minute" another 6d. Thus at 21/- per dozen it is possible to obtain a half-minute thermometer of a reliable character, and we think these last the best for general use, as "five-minute" thermometers waste the nurse's time, and try the patience of the sick person. Messrs. Ferris & Co. also produce a "mobile" thermometer, an improvement which renders the index easy to shake down. These with magnifying index, "half-minute." cost 5/6, and are very reliable.

Consulting Room Desk and Cupboard.—Messrs. Sumner & Co. send us (*Fig.* 75) a desk and cupboard for the consulting room, or the out-patient department of hospitals. Its primary idea is that it shall be aseptic, and to this end it is made of seamless steel tubing, with all edges and joints perfectly

rounded so that there is no place for dust or dirt to lurk. It has a shelf for sprays, bottles, etc., and a dust-proof cupboard divided into three compartments for dressings, bandages, etc. It has a sloping shelf, made of glass, at a convenient height for writing prescriptions, etc, *while standing*; this shelf is four feet from the ground, and the height of the whole appliance is 56 inches. In width it is only 20 inches, and has a depth of 16 inches. It will find many uses in rooms already provided with ordinary desks, on account of its convenience for storing dressings and appliances in an aseptic manner.

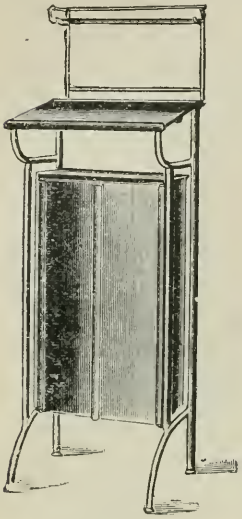

Fig. 75.

Cooler of Boiling Water.—This is intended to cool water after boiling for the purpose of sterilization, so that time may be saved. The drawing we give (*Fig. 76*) will explain itself. It is made by Messrs. Down Bros., Ltd., 21, St. Thomas Street, S.E.

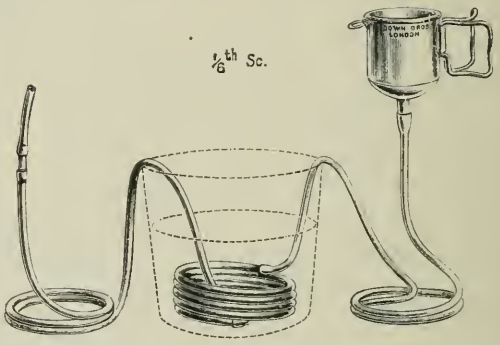

Fig. 76.

Cotton-wool Caddy.—In the daily examination of patients we frequently need a piece of cotton-wool, or perhaps a tongue-cloth. Messrs. R. Sumner & Co. have provided a handsome nickel-plated caddy with two divisions for holding such things, and we have found this when placed upon the consulting-room table a very great convenience, as it saves us wandering off to the drawers where surgical dressings are ordinarily kept. The cost is only 4/6, and the idea is so good that it will appeal to the busy practitioner.

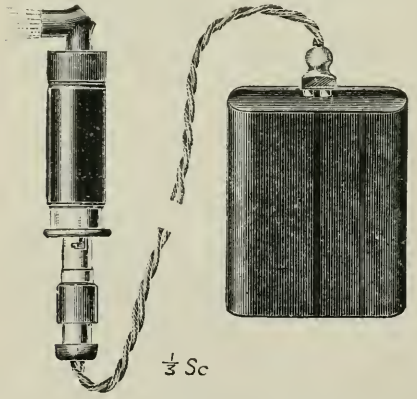

Fig. 77.

Direct Ophthalmic Illuminator.—Messrs. F. Davidson & Co., 140, Great Portland Street, W., have introduced a small electric lamp (*Fig. 77*) by which the retina can be *directly* illuminated. The pupil being dilated, and the patient being in a dark room. the instrument is held an inch or two from the pupil, and observation is made by looking along the upper surface of the tube in which the light is concealed. This instrument should be of great use to the general practitioner,

who may not be proficient in ophthalmoscopic examinations; and especially as it involves so little expense, the entire instrument with battery being sold at 30/-.

Decalcified Cancellous Tissue.—At the suggestion of Dr. F. W. Robinson, of the Huddersfield Infirmary, Messrs. Jas. Woolley, Sons & Co., of Manchester have prepared decalcified bone in such a form that it may be used for the treatment of granulating wounds, obstinate fistulæ, and callous ulcers. This method has proved very successful in practice, the bone being readily absorbed, which was not the case when sponge was used for a similar purpose. The fact that the decalcified bone can be obtained ready prepared should ensure an extensive trial of this method.

Douche Stand.—This is a simple and portable apparatus by which a douche can be fitted at any convenient height for ordinary use. It consists (*Fig.* 78) of an arrangement by which a rod, formed of telescoping tubes, can be fixed to a chair or the bed, the exact height being determined by turning a screw. The arrangement when closed does not exceed the length of an ordinary midwifery bag, and weighs only 1¾ lbs., the tubes being made of aluminium to ensure lightness. Dr. C. B. Pasley, of Dublin, suggested the necessity of such an appliance for midwifery and surgical work, and Messrs. Fannin & Co., Ltd., of Grafton Street, Dublin, have carried out the idea very elegantly.

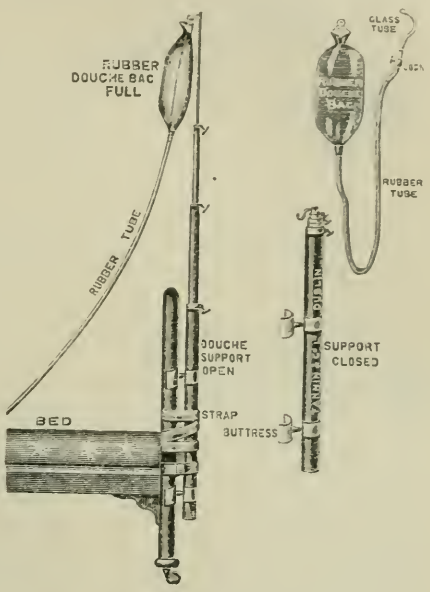

Fig. 78.

Dressing for Suprapubic Cystotomy.—This is the design of Dr. G. H. Colt, and is for application to the surface of the skin around a suprapubic urinary fistula after the drainage tube has been removed, to collect and remove the urine. It consists of a light hollow cylinder (*Fig.* 79) of clear glass from which is led off a rubber tube to discharge bladder contents; the cylinder is partially closed above and is opened out into a flange below. Around the flange is arranged a circular rubber disc, the joint being made water-tight by springing the edges of the hole in the rubber over the glass.

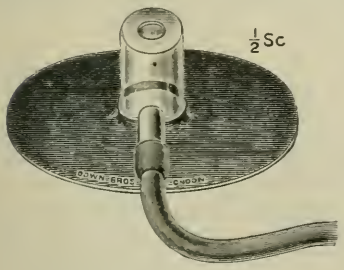

Fig. 79.

It is attached to the abdomen by the application of rubber solution to the rubber disc shown in the illustration. Messrs. Down Bros., Ltd., St. Thomas Street, S. E. manufacture the appliance.

Ear Douche.—This is intended to be fitted to an ordinary douche can, and is so arranged that the flow of water can be arrested, or exactly graduated as regards pressure by the operator or patient. The arrangement is most

ingenious, but difficult to describe. The primary idea is to provide an arrangement which will enable patients with disease of the middle ear to use the douche themselves and gradually increase the flow of water as they are able to bear it. The cost is only 1s. 6d., and we think it will be very much appreciated by patients. Messrs. R. Sumner & Co., of Liverpool, produce the appliance (*Fig.* 80).

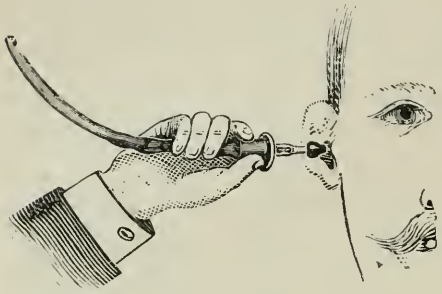

Fig. 80.

Elastic Stocking.—Mr. J. Haywood, of Castle Gate, Nottingham, has made further improvements upon his well-known elastic stockings, which we have noticed favourably in previous issues.

Elastic Stocking Soap.—Wearers of elastic stockings and bandages will be glad to know that Messrs. Ferris & Co., of Bristol, supply a fluid especially intended for cleansing these supports, and also give the necessary directions.

"Equipoise" Beds and Couches.—By an entirely new mechanical arrangement it is possible with one of these beds or couches (*Fig.* 81) to raise a patient, however heavy, to the sitting posture, without effort on the part of the nurse; also the patient is himself able to alter the level of his head and shoulders at any time, and the position is rendered permanent by a simple locking device. The whole mechanism is excellent. The bedsteads are manufactured by the Equipoise Couch Co., Ashford, Kent, to whom it would be advisable to write for a descriptive circular.

Fig. 81.

Ethyl-Chloride Inhaler.—Mr. C. Carter Braine, F.R.C.S., suggests that the ethyl chloride, instead of being sprayed into the bag or upon lint or sponge as usual, should be put into a glass tube, connected with the bag by a stop-cock. He considers that this enables the vapour to be first given in a very dilute form, and then gradually increased in strength. Mr. J. H. Montague, 101, New Bond Street, W., puts up a bag suitable for the use of ethyl chloride in this way.

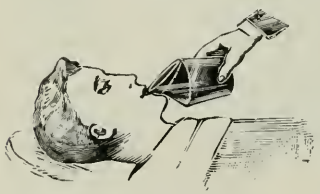

Fig. 82.

Feeding Cup ("The Ideal").—We illustrate here a feeding cup (*Fig.* 82) which will at once recommend itself to the reader on account of its shape. It is made of glass, is easily kept clean and very inexpensive. We have used the cup in hospital practice during the past year, and consider it quite the best thing of its kind. It is supplied by Messrs. R. Sumner & Co., Liverpool.

"Fog" Test for Astigmatism.—This is devised on the principle of fogging vision by the use of a stronger lens than the patient requires, say +4D, and then bringing the radiating lines used for astigmatic testing within the range of vision, and noticing which of them appear or disappear first, or whether all can be seen at the same moment. If astigmatism is found, the same appliance is used for its correction. Messrs. F. Davidson & Co., of 140, Great Portland Street, have produced a simple apparatus for carrying out the test accurately, and as it only costs 12/6, it is one which those who have occasion to test vision can ill afford to do without. The apparatus will be readily understood from our illustration (*Fig.* 83).

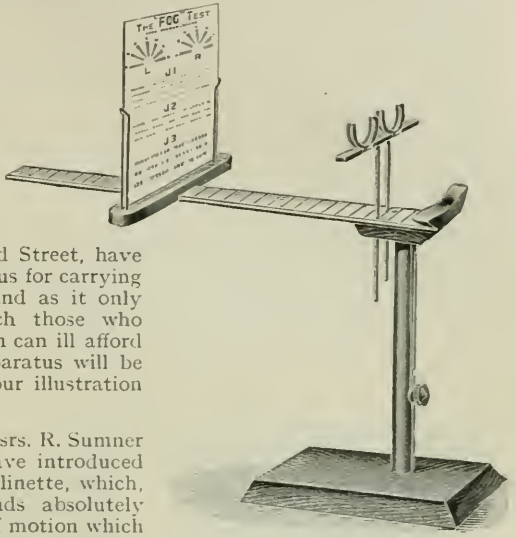

Fig. 83.

Gloves (Surgical).—Messrs. R. Sumner and Co., of Liverpool, have introduced some gloves made of muslinette, which, while they keep the hands absolutely aseptic, allow a freedom of motion which is impossible with the ordinary india-rubber gloves. We think that these gloves will be appreciated by surgeons on this account, and because they are readily rendered aseptic and are very economical.

Gossett's Retractor.—This instrument is self-retaining, and can be fixed at any point. It has been much used by Terrier, Gossett, and others in Paris, for the split-muscle operation in appendicectomy, and in the radical cure of hernia. Its simplicity and convenience at once appeals to those who give it a practical trial, and it is becoming largely used in this country. It is made by Messrs. Allen & Hanburys, Ltd., 48, Wigmore Street, W.

Hine's Heater.—This is an ingenious arrangement by which the domestic lamp or vapour bath can be supplied with hot air or vapour at the will of the patient, either being shut off or augmented by regulating taps, which can be controlled if desirable from within the bath. It is used with methylated spirit as a source of heat, and appears to us a very practical and convenient apparatus (*Fig.* 84). It is produced by the Gem Supplies Co., Ltd., 121, Newgate Street, E.C., and costs 50/-.

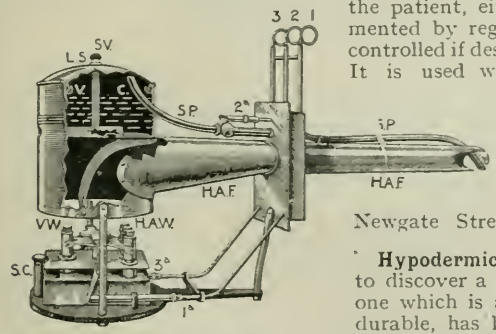

Fig. 84.

Hypodermic Syringes.—The endeavour to discover a perfect hypodermic syringe, one which is aseptic, easily cleaned and durable, has led to many inventions and designs. We have had the "all glass," and the "all metal," and the conclusion has been reached that it is out of these materials the syringe must be made. Vulcanite fittings and rubber

plungers have disappeared. Both the "all glass" and the "all metal" syringes have their disadvantages. A glass barrel properly graduated enables us to see what we are doing; but we have never seen the advantage of a glass plunger, nor even a metal one, which depends for its suction upon friction against the tube, as wear must sooner or later make it defective. In a syringe sent us by Messrs. Ferris & Co., of Bristol, the plunger is of metal, with a groove running round the centre which forms an air plug when the syringe is in use. When not in use the plunger moves so easily in the glass tube that it would not appear to possess the power of suction. This is as it should be, and shows that we possess a really scientific plunger at last. It is easily cleaned with a little alcohol (no grease should be used), and will be always ready for use, however long the syringe may have been disused.

This syringe has another advantage in the fact that it can be instantly taken to pieces for cleansing, and has no screws to become defective and cause trouble. All parts except the barrel are metal. It is clearly graduated, the needles are fine and have a special case to protect them from the air, and in every part this hypodermic syringe is practically and scientifically made, and we can recommend it with every confidence. The cost is 10s. 6d.

Messrs. R. Sumner & Co., of Liverpool, also send us a syringe in which the principles we have mentioned are embodied. It has a glass barrel, but all the other parts are of metal. The new form of plunger is employed, and acts perfectly, even under great pressure. The syringe can be taken apart very easily for cleansing and there are no screws to make weak joints. We have carefully tested this syringe with a view to discovering some weak point liable to give trouble, but we have found none. We can recommend it as absolutely reliable. It is supplied in a neat metal case for 9/-, or in a larger size for serum injections at 18/6 (*Fig.* 85).

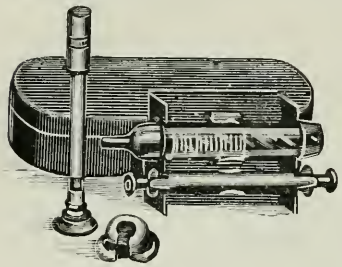

Fig. 85.

Mr. J. H. Montague, 101, New Bond Street, W., sends us an all-glass hypodermic syringe made of opaline glass, with a milk-white glass piston, so

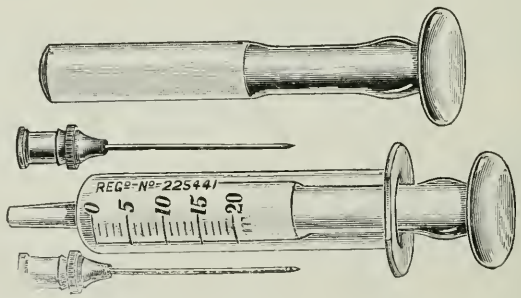

Fig. 86

that the graduations can be more easily discerned than is the case with most instruments of this class (*Fig.* 86). It is sent out in a neat metal case.

Laryngoscope with Celluloid Head Band.—Messrs. R. Sumner & Co. have introduced a laryngoscope mirror with a head band of white celluloid, perforated, instead of the ordinary elastic band. The value of this idea will

be recognized as soon as the celluloid band has been adjusted to the exact size of the head. Then the use of the laryngoscopic mirror for examination and operation is very much like putting on one's hat, it is an instantaneous act, and it is comfortable. Neither a picture nor a description would convey the idea that there was any great merit in this novelty; but practical trial proves its great convenience to all who, like the writer, make all examinations of throat, vagina, and rectum by reflected light, and consequently use a mirror many times a day.

The mirror is excellently made and can be adjusted to any necessary height or angle. It is more hygienic, lighter, and more comfortable than the elastic band generally used. This costs 12/-; the complete laryngoscope in box, with hand mirror, tongue depressor, etc., 35/-.

Leiter's Urethroscope, Modification of.—Mr. Wyndham Powell, F.R.C.S., has made some modification of this instrument (*Fig.* 87) with a view to increasing the light obtainable chiefly by the use of a condensing lens and reflecting mirror, which is capable of being fixed when the proper angle has

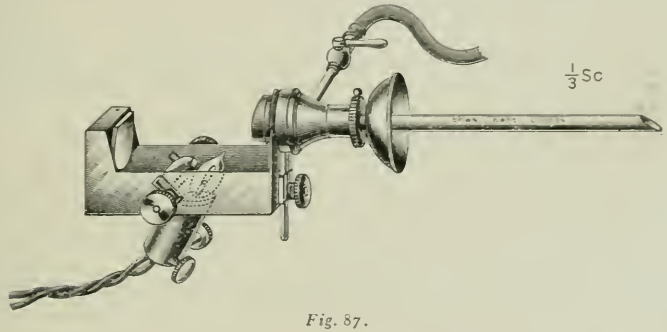

Fig. 87.

been reached. The instrument has other modifications designed to increase its practicability and convenience when in use. It is made by Messrs. Down Bros., Ltd., St. Thomas Street, S.E.

Mask for Chloroform, etc.—We illustrate here (*Fig.* 88) a modification of

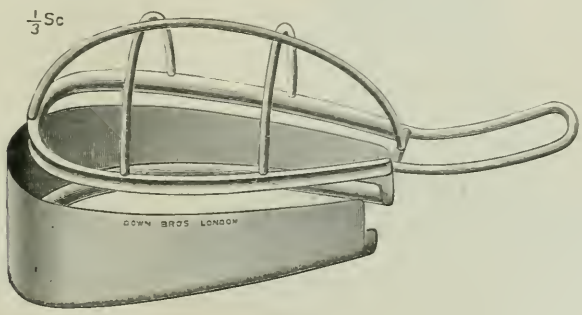

Fig. 88.

Rosthorn's mask made by Messrs. Down Bros. The construction will be understood from the illustration. We have not tested its practicability.

Metal Case with Porcelain Pot.—We figure here (*Fig.* 89) a very elegant case for carrying vaselin or soft soap in the midwifery bag. It is supplied, filled with either at 2/-, by Messrs. R. Sumner & Co., of Liverpool. It will be found useful for many other purposes.

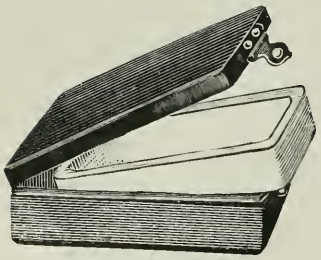

Fig. 89.

Mosquito Forceps.—Under this name Messrs. Ferris & Co., of Bristol, have made a pair of very fine artery forceps, well suited for picking up a tiny blood-vessel, or for any purpose where a fine point is required. In spite of their fineness they give a firm grip and are beautifully made. They cost 4/6.

Mouth-gag.—Mr. J. H. Montague, of 101, New Bond Street, W., has introduced a mouth-gag, with Ackland's mouth plates and an improved ratchet It appears to us very suitable for its purpose; it can be used from either side of the mouth, and is easy of introduction (*Fig.* 90).

Mouth Gag (Dent's).—This is a very neat appliance, and is quite effective. It takes up less space in the surgical bag than many we have seen, and will meet every purpose for which a mouth gag is required. It is made by Messrs. Ferris & Co., of Bristol.

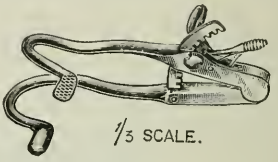

Fig. 90.

Murphy's Button.—It is sometimes found that "Murphy's Button" has not been approximated accurately, and then it is necessary for the surgeon to make another incision in the intestine, or to keep on untwisting it, with the result of twisting up the intestine. Messrs. Allen & Hanburys, Ltd., have introduced a new "Murphy's Button," which can be released by giving the instrument half-a-turn. This should prove of great convenience to our surgical friends.

Nurses' and Midwives' Bag.—This bag is made of strong, black leather, and is furnished with a removable lining which can be washed (*Fig.* 91). It contains everything which a nurse is likely to require in either a midwifery case or for sick nursing, and perhaps rather more than the ordinary nurse could be expected to have with her; but this is a fault in the right direction. The fittings include four stoppered bottles in box-wood case, intended for sal volatile, etc., an enema syringe, vaginal douche can, female catheter, scissors, thermometer, nail brush, and antiseptic soap in metal case—superfatted soap with iodic hydrarg. carbolized ointment, etc.

Fig. 91.

It contains everything that is required under Rule E of the Midwives Board (Midwives Act, 1902). It is excellently made and fitted by Messrs. Ferris & Co., of Bristol, and costs £2 2s.

Nasal Douche (Ferris).—This is an ingenious arrangement by which the patient practically pours an antiseptic fluid through the anterior nares into the pharynx, and is able to regulate the flow or arrest it by pressure of the finger. We have always objected to nasal douches in which fluid is injected under pressure, and this simple and inexpensive appliance (*Fig.* 92) appears to us to be quite unobjectionable, very portable, and quite aseptic. The cost is only ninepence each.

Fig. 92.

Ocules.—Under this name Messrs. Ferris & Co., have prepared gelatine capsules shaped much like a Florence flask, and containing ung. hydrarg. oxid. flav., or other ointment required for application to the eyelids. In use the narrow end of the capsule is snipped off and the ointment is squeezed out with gentle pressure. It will be understood that the gelatine tube does not irritate the sensitive mucous membrane. The idea is a good one and will recommend itself to any practitioner who tries one of these ocules. It also furnishes a convenient way of dispensing small quantities of ointment for ocular use, as each is put up in a neat box.

Operating Apron.—This is made of a light waterproof material called muslinette, which bears sponging with boiling water, so that it is easily kept clean. It covers the whole of the front of the body and fastens at the back, leaving the arms free. Mr. Thelwall Thomas, of Liverpool, has adopted this pattern, which appears to meet every requirement in a most satisfactory manner. It is made by Messrs. R. Sumner & Co., of Liverpool, and costs 7/6, or in plain unbleached calico, 5/6.

Ophthalmic Drop Bottle.—This little bottle (*Fig.* 93) is fitted with a safety tube which prevents any fluid which has been drawn up into the pipette running into the rubber nipple when the bottle is laid on its side or the pipette everted. It is therefore convenient for carrying in the pocket. It can be easily sterilized. It is made at the suggestion of Mr. J. Burdon Cooper, M.D., by Messrs. Down Bros., Ltd., St. Thomas Street, S.E.

2/6

Fig. 93.

Ovum Forceps.—This is a very cleverly arranged instrument, because it forms not only an excellent forceps for removing the ovum, but when the two blades are separated, one makes an excellent uterine curette, and the other a useful hook with which to aid the operation. It is an instrument which should find a place in the obstetrician's bag. It costs 6/6, and is made by Messrs. R. Sumner & Co., Liverpool (*Fig.* 94).

Fig. 94.

Prostatic Instruments.—The great development of prostatic surgery has led to the introduction of several new instruments for facilitating the operation. Thus *Young's Prostate Forceps* have blunted ends with the teeth turned slightly backwards, so that the prostate is firmly held without the danger of damaging it by tearing. Lynn Thomas has introduced a *Prostatic Elevator* for lifting the bladder in enucleating the prostate ; and Segond has produced

an *Enucleator* which is a much cleaner and less tiring method of shelling off the prostate than the use of the finger nails. Messrs. Allen & Hanburys, Ltd., make all these instruments in a very satisfactory manner.

Refrigerator.—In comparatively few ordinary households do we find a "refrigerator." This is less because we have no weather requiring them, than because they are usually such costly and cumbrous affairs, that they are regarded rather as a luxury and an encumbrance in the ordinary dwelling-house, where space is limited. We have had sent to us a refrigerator safe, of which we give an illustration (*Fig.* 95). It takes the form of a cupboard, and will stand upon any table or bracket, and can be used for a place to keep butter, milk, jellies, etc., all the year round whether the ice chamber is required or not. Made, as it is, of non-conducting material, it will be the coolest place for keeping them, and when the weather is hot it is only necessary to put a little ice into the proper receptacle to have an excellent refrigerator. It therefore pays for its space, it looks handsomer, and can be kept cleaner (being all metal), than ordinary cupboards used for this purpose, and the cost complete for a size large enough for any ordinary household is only thirty shillings. We know that during illness a refrigerator is most valuable, and beef jelly put "outside on the window-ledge" indicates the necessity for something better.

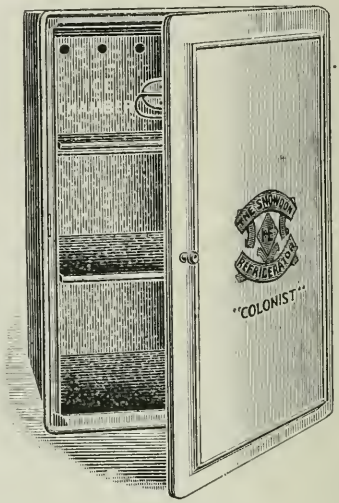

Fig. 95.

We can recommend these "refrigerators" to our patients with every confidence that they will be appreciated by all who purchase them; they are nice to look at, and well ventilated. We should think that there will be a great demand for them in the Colonies and in tropical regions, as they are so light and portable. Messrs. R. Sumner & Co., Liverpool, are the manufacturers.

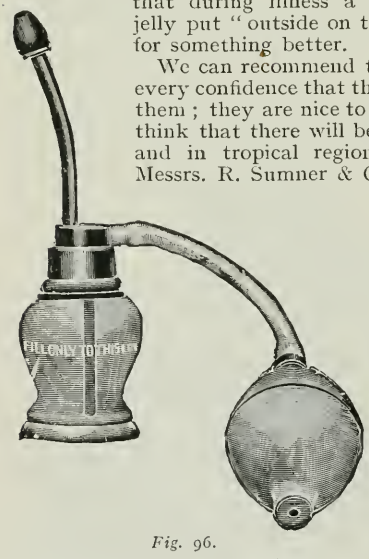

Fig. 96.

Sponge Holders in Case. — Three sponge holders, one straight, one curved, and the other rectangular, are put up in neat cases by Messrs. Ferris and Co., of Bristol, for 5/6. They are well suited for making local applications to the nose, throat and vagina, by means of a pledget of cotton-wool, and have an advantage over a probe used for this purpose in the fact that the cotton-wool can be instantly released after the application is made. We find it an advantage to have these instruments together in a case, as they are then more easily found when wanted.

Sprays (Saxol Cloudiser).—This appliance (*Fig.* 96) when used for saxol or other oily substances, produces a cloud-like vapour which is easily drawn into the lungs, and is therefore more far reaching than the ordinary spray.

It is well made, and costs only 2/10, which is a very small price for an appliance of this kind. It is made by Messrs. Ferris & Co., of Bristol, whose pure petroleum oil, which they sell under the name of "saxol" we have used for many years as a basis for all throat and nose sprays.

Sterilizer (Obstetric).—Dr. J. B. Hellier, of Leeds, has devised a simple sterilizer for obstetric purposes. It is made of copper as thin as it seems wise to make use of, and measures 15½ ins. by 4½ ins. by 2½ ins. It contains a tray that can be lifted out, stands on folding legs, weighs 2 lbs. 5 oz., and holds 3 pints of water. It is heated by a three-burnered wickless spirit lamp, which when half filled with spirit weighs 1 lb. 8 oz. The lamp will not act properly if too full. It is a very practical appliance, and is excellently made by Messrs. Reynolds & Branson, of Leeds. The cost complete is 27/-.

Stethoscope Chest-piece.—Messrs. Reynolds & Branson, of Leeds, have produced a new chest-piece invented by Dr. F. W. Cory, of Ossett. There are two holes for the stem, one at the top, the other at the side (*Fig.* 97). It can be used in the ordinary way, the side hole being closed by the finger. If the side hole be uncovered before withdrawing it from the skin, no unpleasant suction in the ears is experienced as is the case with the ordinary stethoscopes. Another distinct advantage is that with the stem in the side hole it can readily be slipped between the clothes and the skin. It is especially useful, therefore, for the examination of women where undue exposure is undesirable. Price 3/6.

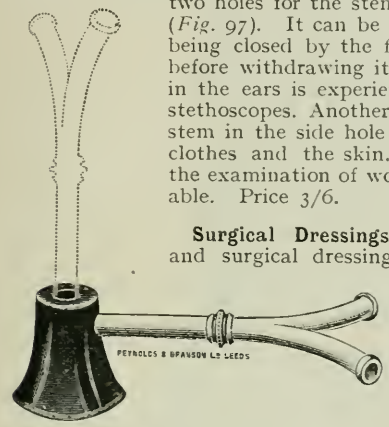

Fig. 97.

Surgical Dressings.—The greatest novelty in bandages and surgical dressings is a new method by which they are compressed into the smallest possible compass, and then carefully wrapped up and labelled for use until required. As a result of this system the roller bandage takes the form of a square packet, and it is difficult at first to believe that so many yards of bandage can have been put away into so small a space; but when the cover is removed the bandage is in its normal condition and ready for use. The advantage of the method is not only that it renders dressings much more portable, both for the surgical bag and for field service, but that it keeps them in an absolutely aseptic condition until ready for use. Messrs. Ferris & Co., of Bristol, send us some excellent samples of bandages and dressings prepared in this way.

These include wools and lints in square packages containing one and two ounces. Gauzes in lengths of 2½ yards, bandages in various widths 6 yards long; these include calico, open-wove, and sal alembroth bandages, and also sanitary towels. We hope to see this handy and efficient way of dealing with surgical dressings universally adopted.

Messrs. Burroughs, Wellcome & Co. have adopted this method, and send us specimens of boric, sal alembroth, and cyanide gauze, each containing three yards compressed into a small square packet. Two full-sized Esmarch's triangular bandages are compressed into a remarkably small package. The firm also make a great feature of sanitary towels put up in this form, and their advantage to ladies, especially when travelling, is very obvious. They also put up in addition to the absorbent and antiseptic wools, packets of carbolized tow, which is thus supplied in a form which makes it easy to handle, as it is only necessary to take out the quantity likely to be required at one time, and the remainder will retain its compact form. The same applies to cotton-wools.

We regard this method of preparing dressings as the greatest advance that has been made for many years, and we are sure that our readers will not be slow to take advantage of it.

Surgical Pocket Cases.—The days of the leather pocket case, with tortoise-shell handled knives, have passed; it was followed by the all-metal case with a number of knives with a universal handle, but this did not contain the few things which the practitioner needs on his daily rounds. Lately a little metal case has been contrived, smaller than an ordinary cigarette case, containing a pair of scissors, artery forceps, dressing forceps, two-bladed knife, exploring needle, probe, and director ligatures, and surgical needles. For all ordinary purposes this is all the practitioner is likely to require on the daily round,

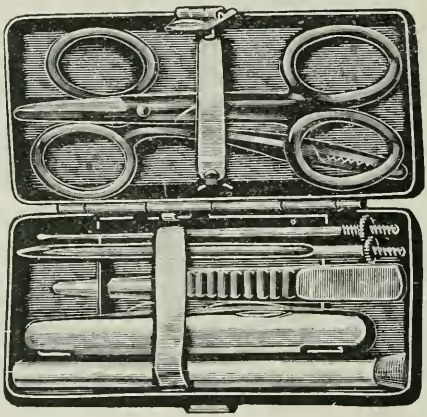

Fig. 98.

and although the instruments are not large they are thoroughly practical and the knife blades are of good Sheffield steel. The advantage of having such a little case in the pocket is obvious, and we have had frequent occasion to regret that we did not make it a rule to always have a few instruments such as these with us, as we are all liable to be faced by an emergency when the surgical bag is far away. Messrs. Sumner & Co., of Liverpool, who produce this case, enclose it in a neat leather purse at a cost of 21/- (*Fig.* 98).

Messrs. Ferris & Co., of Bristol, also produce an all-metal surgical case on the same lines as the above, but a trifle larger: it contains the same instruments as mentioned above, and in addition a silver caustic-holder. It has a space which may be used for a hypodermic syringe, or for carrying needles and ligatures. The latter appear to us necessary in a surgical emergency case. The cost of this case is 30/-, and we think our readers will be pleased with it and find it of great practical advantage.

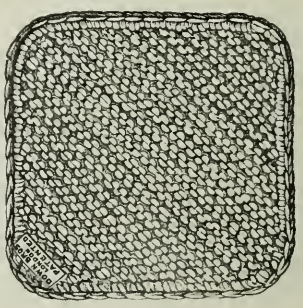

Fig. 99.

"Surgical Sponge."—This is made of hand-knitted cotton stained with methylene blue (*Fig.* 99). It is intended to be asepticised and used repeatedly. It is the invention of Mrs. George, of Oxford, and made by Messrs. Down Bros., Ltd., 21, St. Thomas Street, S.E. We have not had an opportunity of testing this appliance.

Syringe for Removal of Cortex in Cataract Extraction.—This is a modification (*Fig.* 100) of Mackeown's syringe, suggested by Dr. W. J. Wanless. It

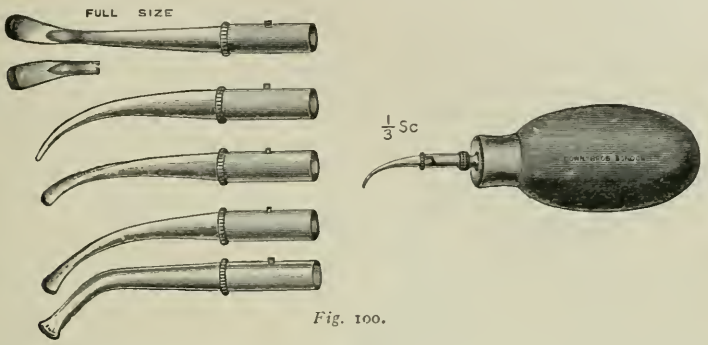

Fig. 100.

can be used with one hand, and is easily sterilized. It is excellently made by Messrs. Down Bros., Ltd., 21, St. Thomas Street, S.E.

Tongue Depressor and Cheek Retractor.—The latest tendency is to make these of strong wire, plated, which facilitates cleansing and leaves the parts under examination uncovered.

Messrs. Ferris & Co. have one of the rectangular type with a long and short "blade" for children and adults, which is thoroughly efficient and costs 2/-.

Fig. 101.

Messrs. R. Sumner also send one made on the same principle, but which is straight, with a curved end for retraction of the cheek; this costs 1/4. The small price of such instruments enable a number to be employed in the Out-patient department, so that those which have been used can be properly sterilized before they are employed again, and time saved during the consultation period (*Fig.* 101).

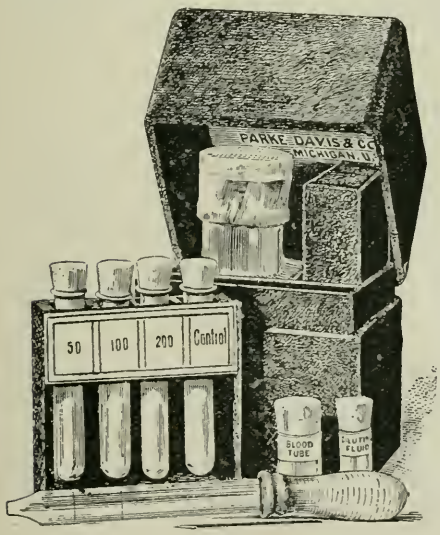

Fig. 102.

Typhoid Agglutometer.—This is a complete apparatus (*Fig.* 102) by which an accurate diagnosis of typhoid may be made without the use of the microscope or the necessity of laboratory apparatus. Its efficacy has been tested, and its use advocated by Prof. McFarland, of Philadelphia. The principle is the Widal test, and depends upon the fact that typhoid bacilli continue to be susceptible to clumping or agglutination after having been killed by an antiseptic, and this property continues indefinitely. When typhoid blood-serum is added to a tube containing a suspension of typhoid bacilli, the agglutination commences, and is visible to the naked eye. The tube should be examined

in one hour, and again three hours later. The rapidity of the reaction is affected by the temperature at which the tubes are kept. The complete apparatus for making the test is put up very cheaply by Messrs. Parke, Davis & Co., 111, Queen Victoria Street, E.C., and it is clearly one which every practitioner should possess.

Vaginal Douche.—This is a most ingenious appliance intended to obviate the difficulty of giving a vaginal douche in bed without wetting the bedclothes. There is a porcelain appliance, made to fit the entrance to the vagina, which has a receptacle into the centre of which the douche pipe is admitted by a small hole just sufficient for it to pass, and the lower part has a nozzle, to which a piece of india-rubber tubing is fixed for removing the fluid. So long as the porcelain part is pushed against the vagina no water can escape, and as the hands are free to do this there should be nothing to prevent the appliance proving efficient (*Fig.* 103). It is made by Messrs. R. Sumner & Co., Liverpool, and costs 4/6.

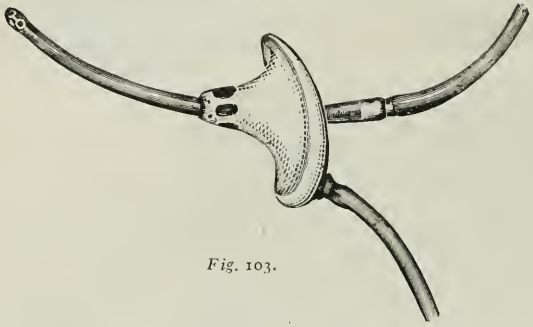

Fig. 103.

Vaginal Retractor (Walsher's).—The advantage of this instrument is that it can be fixed on any operation or ordinary table, or a board can be slipped under the back of the patient, and the retractor clamped to it; the blade of the speculum is then applied to the posterior wall, and the vagina retracted to the desired extent, and fixed at any point. The retractor can be adjusted to any height, angle, or depth as required. It is made by Messrs. Allen & Hanburys, Ltd., 48, Wigmore Street, W.

PROGRESS OF PHARMACY, DIETETICS, &c.

Acidol.—This is the chloride of an organic base (betaïn) which is wholly free from action on the organism; and it contains almost the same quantity of hydrochloric acid (23·78 per cent) as the official acid. It forms colourless crystals, or a white powder, and is freely soluble in water. As the salt is in great part decomposed in presence of water, the solution of acidol has a therapeutic action precisely similar to that of dilute hydrochloric acid, a $7\frac{1}{2}$ grain dose of acidol being equivalent to 4 or 5 drops of pure hydrochloric acid, or to 8 or 10 drops of dilute hydrochloric acid. A 15-grain dose of acidol is equivalent to 8 or 10 drops of the official hydrochloric acid or to 16 to 20 drops of the dilute acid.

Acidol in its aqueous solutions has a mild, fruity flavour, the acid being but slowly and partially set free by hydrolytic action; for this reason it is preferred to the raw hydrochloric acid by dyspeptics.

Acidol should always be taken dissolved in water, never in the dry state; the most convenient form for its use is the soluble pastilles containing $7\frac{1}{2}$ grains. One or two of these pastilles may be taken three times a day after meals. Cartons of 50 pastilles are sold retail at 2/6. Messrs. Chas. Zimmermann & Co., 9 and 10, St. Mary-at-Hill, E.C., are the manufacturers.

Anæsthetic, Dental (Martindale).—Under the above name Mr. Martindale, 10, New Cavendish Street, W., puts up a solution containing 1 per cent cocaine with iodine in the requisite chemical combination. It is harmless in action,

even to those who are susceptible to the action of cocaine, and will prove a valuable preparation in many cases which come under the observation of the physician, as well as the dentist.

Anæsthetics (Local).—Messrs. Parke, Davis & Co., 111, Queen Victoria Street, E.C., have prepared tablets of *Adrenalin* and *Cocaine*, which will, we believe, meet with much favour from dentists and others, inasmuch as their use enables anæsthesia to be produced promptly, safely, and economically. The adrenalin prevents the too rapid absorption of the cocaine, so that a much smaller dose of the latter suffices, while anæsthesia is prolonged and hæmorrhage is restrained, if not entirely prevented. One tablet will make 15 to 30 minims of solution, the latter having been found strong enough for ordinary cases of tooth extraction. Each tablet contains $\frac{1}{2000}$ gr. adrenalin and 1–6 gr. cocaine hydrochloride. They are sold in tubes of 25 tablets.

The same firm prepare under the name of "*Codrenine*" a local anæsthetic and hæmostatic solution, containing 2 per cent of cocaine hydrochloride, together with adrenalin chloride. The adrenalin prevents the absorption of the cocaine and mitigates its toxic effects, while the anæsthesia is more prolonged and more effective, and hæmorrhage is either entirely prevented or very much restrained. Each cc. (16·9 minims) contains 0·02 gr. ($\frac{1}{2}$ grain) cocaine hydrochloride, and 0·00006 gr. (1·1000 grain) adrenalin chloride. For dental purposes, 0·5 to 1 cc. (8 to 17 minims) of "Codrenine" may be injected into the gum two or three times before extracting the tooth. For small operations "Codrenine" may be used undiluted, but for producing local anæsthesia over a large area, one volume should be diluted with nine volumes of physiological sodium chloride solution. "Codrenine" is supplied in 1 oz. and 10 cc. stoppered bottles, and in hermetically sealed ampoules, each containing $\frac{1}{2}$ cc. ($8\frac{1}{2}$ minims).

The name "*Eudrenine*" has been given to a combination of adrenalin chloride $\frac{1}{2000}$ gr. and eucaine $\frac{1}{6}$ gr. in each cc. (16·9 minims) with which many painless and nearly bloodless operations have been performed at University College Hospital. For tooth extraction it can be used undiluted by injecting into the gum, a few minutes before operating, the contents of one or two ampoules (8 to 17 minims) according to the number of teeth to be extracted. For small surgical operations "Eudrenine" may be used undiluted, but where a large area requires to be anæsthetized, it may be diluted with 4 volumes of physiological sodium chloride solution. It is prepared in 1-fl. oz. bottles, 10 cc. bottles, and $\frac{1}{2}$ cc. ampoules by Messrs. Parke, Davis & Co.

Alypin—This is a new local anæsthetic introduced by Messrs. Bayer & Co., Ltd., 19, St. Dunstan's Hill, E.C. It is a derivative of glycerin. It is a white crystalline powder, neutral in reaction, and easily soluble in water and spirit, but sparely in ether. It may be boiled for a short time without decomposing, so that it can be rendered sterile. It is said to be quite as powerful in its action as cocaine, but less toxic; that it produces no mydriasis, and no disturbance of accommodation. All reports, so far, justify the opinion that Alypin is destined to an important place amongst local anæsthetics.

Antiarthrin.—We have received from Messrs. Reitmeyer & Co., of 63, Crutched Friars, E.C., samples of a preparation with the above name, which is claimed to possess great efficacy as a uric-acid solvent and to be perfectly harmless, even in large doses. We know nothing of the composition of this remedy and are therefore unable to express any opinion concerning it, and we cannot undertake the responsibility of experimenting upon our patients with a drug of unknown formula.

Antigangrenin.—This may be described as a volatile preparation of Chinosol intended for purposes of inhalation. It consists of pure oxychinoline dissolved in terpinol and eucalyptol, with some menthol added. It has been brought forward as a remedy for fœtid bronchial disease, and we have no doubt that it would be an excellent remedy in this condition, but we think

also it will find a wider sphere in the treatment of all ordinary catarrhs of the nose and larynx. We are convinced that the free use of *volatile* antiseptics is the most efficient remedy in such cases, and antigangrenin possesses just the qualities required, both as an antiseptic and a sedative to the mucous membrane ; for this reason we think the choice of name not very happy. Messrs. B. Kühn & Co., 16, Rood Lane, E.C., are the manufacturers.

Bekadol.—This is a liquid which, when applied to burns and scalds, gives immediate relief, and is said to prevent the formation of blisters. It is manufactured by Messrs. B. Kühn & Co., of 16, Rood Lane, E.C., and appears worthy of trial.

Bismuthi c̄ Salol (Cremor).—An emulsion with bismuth in a finely divided state and salol in a suitable dose, gives almost immediate relief in diarrhœa and dysentery, and will relieve many cases of flatulent dyspepsia. It has also been used in typhoid with good results. Messrs. R. Sumner & Co. put up an excellent preparation with these ingredients at 3/6 per lb.

Blaud's Pill and Cod Liver Oil.—The combination of these in a single capsule is so unusual as to be remarkable, but clinical experience has justified it, and Messrs. R. Sumner & Co. put up capsules containing ℥ 10 of the oil with one Blaud's pill at 2/- per hundred, which is sufficient proof that there is a demand for them.

Boro-Thymene (Ferris).—This is an elegant antiseptic containing boric acid, thymol, eucalyptol, benzoin, etc., put up by Messrs. Ferris & Co., Bristol.

Bromo-chloral.—The value of bromide in combination with chloral as a safe and reliable hypnotic is well known, and a preparation containing 15 grs. of each to a drachm, with the addition of cannabis indica and henbane will prove very useful in general practice. It is prepared by Messrs. Jas. Woolley, Sons & Co., of Manchester, at 4/- per lb.

Capsicum Pads.—These are absorbent pads treated with capsicum, which, when worn next the skin develop a comforting heat and give some relief in rheumatic affections, etc. They are made so that they can be applied to any part of the body and affixed by tapes. The application of a little oil or dilute spirit to the skin prior to their application will intensify the effect. They cost 5/- per dozen, and are made by Messrs. R. Sumner & Co., Liverpool, who also make a capsicum wool prepared in the same way at 5/- per lb.

Capsolin.—This is a combination of oleoresin, capsicum, camphor, oil of turpentine, oil of cajuput, and croton oil, with a base agreeably aromatized. An excellent external counter-irritant that may be advantageously employed instead of a mustard plaster in treating pains and colds in the throat and lungs. It does not blister the skin. It is prepared in collapsible tubes by Messrs. Parke, Davis & Co.

Chinosol.—The Chinosol Co., 16, Rood Lane, E.C., have recently introduced a boxwood case, suitable for the pocket or surgical bag, containing twenty pellets of chinosol (5 grs.), so that the practitioner can instantly prepare a solution of definite strength of this valuable antiseptic. It is very soluble and its solution does not stain, and is extremely convenient for obstetric cases.—*See also* "Antigangrenin."

Chloroform.—There is a variability in the results of chloroform administration, due to difference in the actual product manufactured or to products of decomposition.

Messrs. Burroughs, Wellcome & Co., have been investigating this subject in their laboratories, and they have come to the conclusion that after every care has been taken to secure the greatest purity attainable, that it is of advantage to have a small but definite amount of ethyl chloride present.

They regard it as having a decidedly beneficial action on its power as an anæsthetic. They claim for the "Wellcome" Brand a definite standard of composition, which we are sure they will maintain.

Creosalgen.—This is an alkaline solution of the chief constituents of cresylic acid. It is miscible with any proportion of water, and it is usually diluted in the proportion of 1 in 100 to make an effective disinfectant and deodorant. It is very inexpensive and of proved reliability, and has been adopted by many of the Public Health authorities. It is manufactured by Messrs. C. J. Hewlett & Sons, of 35–42, Charlotte Street, E.C., who also put up a preparation called Surgical "Creosalgen." Creosalgen Jelly which contains 1 per cent of surgical creosalgen with a lanolin base, and also a Disinfecting Powder which contains 15 per cent creosalgen.

Cyllin.—It was not until some recent experiments came under our notice that we realized how poor an antiseptic carbolic acid is as compared with cyllin. Various experiments with different organisms and by various observers show that cyllin is from ten to thirty-two times more fatal to germs than carbolic acid.

It is to be noticed that Cyllin does not contain carbolic acid nor any of its homologues, and is free from their poisonous and irritant action. It is only by bacteriological examination that the full value of any antiseptic can be ascertained, and the evidence of the value of cyllin is overwhelming. As a tea-spoonful is sufficient to make a quart of disinfectant, it possesses the quality of being cheap, convenient, and portable. It is manufactured by Jeyes' Sanitary Compounds Co., Lim., 64, Cannon Street, E.C.

Digitalis, Strophanthus, and Squill are amongst those drugs which it is impossible to standardize by chemical tests, and Messrs. Evans, Gadd & Co., of Bristol and Exeter, have submitted samples of their preparation to the Pharmacological Laboratory of the University of Cambridge, which has tested them and established the lethal dose on frogs in respect to each. In this way it is possible to maintain a definite standard in respect to such drugs. We welcome such efforts to ensure the reliability of remedies, as the reputation of the physician depends upon them and when chemical tests are unavailable we have no other means of knowing the exact strength of the therapeutic agent we are using.

Elixir Hypophos. Co.—This is a palatable preparation of the hypophosphites, prepared by Messrs. Reynolds & Branson, and is recommended as a suitable nervine tonic, in virtue of its neutral character being preferable to the acid preparations usually prescribed. Each fluid drachm contains hypophos. of quinine, calcium, sodium, and iron, āā 4 grs. with strych. gr. $\frac{1}{16}$.

Elixir Pini.—Messrs. Reynolds & Branson, of Leeds, have devised under the above name a suitable form for prescribing oil of mountain pine, which in combination with other useful adjuncts is recommended for the treatment of catarrh and all bronchial affections. The objectionable taste of the oil is well masked. Each drachm contains 2 minims of the oil.

The addition of terpin hydrate to elixir pini loosens phlegm and assists expectoration, thus forming a good means whereby the distressing symptoms of bronchitis are alleviated.

Elixir Terpini Co.—This preparation contains terpin hydrate gr. j. and heroin hydrochloride gr. $\frac{1}{12}$ to the drachm. It is very useful in bronchial troubles as it soothes the cough and reduces secretion. It is made by Messrs. Jas. Woolley, Sons & Co., Manchester.

Emollientine is the name given by Messrs. Parke, Davis & Co. to an ointment which, from its constituents, should find many uses in general practice. It contains aluminium, hydrate (protective and absorbent), carbolic acid (antiseptic

and germicide), isarol (anodyne and antiphlogistic), lead oxide (emollient), corrosive sublimate (stimulant and germicide), and zinc sulphocarbolate (astringent). It is put up in collapsible tubes.

Ergothe.—Under this name Messrs. Reynolds & Branson produce a reliable preparation of sound ergot of rye which contains all the active principles in an unchanged condition. This is scientifically prepared by an entirely new process by which the therapeutic value is not impaired, and from our experience of the results attained we believe it will give the greatest satisfaction where ever it is employed.

Erythemol Ointment.—This is a synthetic coal-tar product with an organic salt of bismuth combined with a base of lanolin and petroleum. It has been found very useful in eczema, erysipelas, and psoriasis, and to allay the irritation in cases of pruritus ani and vulvæ. It can be obtained also for use in the latter class of case combined with 2 per cent of cocaine. It is made by Messrs. R. Sumner & Co., of Liverpool.

Erythrol-tetra-nitrate (Turner).—This differs from other vaso-dilators in the fact that its effects are much more permanent, one grain given by the mouth will cause a reduction of arterial tension lasting for more than five hours. It is rather a dangerous drug for dispensing, as it is liable to explode if roughly treated. It is distinctly advisable to use it in some ready prepared form, and it should then be kept in dark blue bottles and not exposed to direct sunlight. It is prepared by Messrs. Joseph Turner & Co., Ltd., Queensferry, Flintshire, N. Wales.

Ess. Chloroformi Conc. (Ferris).—This is forty times stronger than ordinary chloroform water and it only requires one to one-and-half drachms of this to a six-ounce bottle filled up with water to make aq. chloroformi. There is a convenience as well as an economy about this method. It means that aq. chloroformi so prepared will cost practically a penny a pound, while there is great advantage in the saving of space. Messrs. Ferris & Co., of Bristol, are the manufacturers.

Guaiaperol.—This is a guaiacolate of piperidine, and combines the antiseptic properties of guaiacol with the action of piperidine as a vascular tonic. It is far less irritant than guaiacol, and has been used in many of the London Hospitals in phthisis with marked success. Ten grains, twice daily in a cachet, after meals is the usual dose. It is manufactured by Messrs. Joseph Turner & Co., Ltd., Queensferry, Flintshire, N. Wales.

Hæmoglobin Co. (Capsule).—The following is a good formula for anæmia and chlorosis. ℞ Hæmoglobin, grs. 4, Tinct. Nux Vom. gr. $\frac{1}{4}$, Aloin gr. $\frac{1}{8}$, Ferrum Redact. grs. 2, Arsenic gr. $\frac{1}{100}$. Messrs. Sumner & Co. put this up in capsules at 2/6 per hundred.

Isopral.—This is a chlorine derivative of alcohol, allied to chloral hydrate. It possesses, in doses of 8–12 grains, a marked hypnotic effect, which may appear in from 15 to 30 minutes. No undesirable effects on the heart or respiration have at present been observed. It appears to neither affect the pulse nor temperature, but care is suggested in cases of heart disease. It is soluble in water, alcohol, and ether, but its solutions have a rather pungent taste, especially the aqueous one. Messrs. Bayer & Co., Ltd., the manufacturers, supply it in tablets of 4 or 8 grains, or it may be given, dissolved in aq. menth. pip., 10 grains to 2 drachms.

The reports of several eminent German physicians lead us to think that this drug will prove of value in many cases of insomnia, being more reliable and quicker in its action than some of the insoluble preparations now in use.

Jothion.—This is an important preparation of iodine for external use, produced by Messrs. Bayer & Co., Ltd. It contains 80 per cent of iodine, but appears as a colourless limpid fluid. When jothion in its dilute form

is rubbed on the skin, the urine commences to give the reaction of iodine within half an hour, and this reaction may continue for some days. This results without any symptoms of iodism or local irritation of the skin. It will be seen that we have thus a very simple and satisfactory way of bringing patients under the influence of iodine, without the internal administration of the iodides. It has been used amongst others by Prof. Pick of Prague, and Prof. Finger of Vienna, in severe gummatous ulcerations of skin and mucous membranes with very great success, and the latter has used it also in the combined quinine and iodine treatment for lupus erythematosus. It is used diluted with spirits of wine and glycerin, 1 in 2 or 1 in 4, or diluted with olive oil, or lanolin and vaselin in the same proportions. We consider from our own trials with this preparation that it is one of the most valuable additions to our therapeutic resources which we have met with for some time, and we shall expect to hear more of it in the medical literature of the coming year.

Lac Bismuthi.—A preparation containing bismuth carbonate finely subdivided and satisfactorily suspended, and not liable to form a clotty sediment, which so frequently occurs when bismuth salts are suspended with the aid of acacia or tragacanth. It is prepared by Messrs. Reynolds & Branson, of Leeds.

Laxans.—Messrs. Hewlett & Sons put up tablets of phenolphthalein, the new laxative, containing $\frac{3}{4}$ gr., $1\frac{1}{2}$ grams and 4 grains, according to the effect required. These should be slowly masticated *not* swallowed. They are quite pleasant to the taste.

Laxatin (Ferris).—Under this name Messrs. Ferris & Co., of Bristol, have produced this new synthetic purgative, which they claim to be perfectly safe and harmless, and especially useful when it is not desired to stimulate the peristaltic action. They put it up in three forms of tablets, "Infants," "Mild," and "Strong," so that the dose may be graduated as required.

Lin. Betulæ Co. (Hewlett's).—This is prepared from the oil of sweet birch; which is known to consist largely of salicylate of methyl. When the liniment is applied to the skin the salicylate is absorbed by the blood, and both the local and internal effects of the drug are produced. In Messrs. Hewlett's preparation the effect is increased by the addition of menthol, camphor, etc. They recommend that 1 drachm of Lin. Betulæ Co. should be added to 1 of castor oil and 2 of rectified spirit to make a useful application in cases of rheumatism, etc.

Those who have used the preparation speak well of it.

Lithium Hippurate.—This is a powerful solvent of lithates, and an effervescing preparation containing 5 grains to a drachm, prepared by Mr. Martindale, of New Cavendish Street. It should prove very useful in the treatment of patients suffering from excess of uric acid, and various arthritic troubles due to this cause.

Magnesia Cream.—This is a concentrated preparation of magnesia hydroxide, each ounce containing 24 grs. It is distinctly preferable to magnesium carbonate, as its antacid action is not associated with the formation of carbonic acid gas on coming in contact with the gastric juice. This is made by Mr. Martindale, 10, New Cavendish Street, W.

Malto-Hæmoglobin (Woolley).—This is a combination of fluid extract of Malt with hæmoglobin and non-astringent iron. It is very palatable and liked by children. Clinical experiments show that it produces a marked increase in the number of red-blood corpuscles and improves the general nutrition. It is made by Messrs. Jas. Woolley, Sons & Co., of Manchester.

Medicated Soaps.—Messrs. Charles Midgley, Ltd., of Manchester, have been devoting their attention during the past year to the manufacture of a

new soap, which is absolutely free from alkali. It is made from an entirely new base under the direction of a well-known dermatologist. It is a soap that can be used on the most delicate skins when no ordinary soap can be borne, and it must be regarded as holding a distinct place amongst soaps used in medical practice. The name Basic Soap is given to it by the firm.

They also make a superfatted soap which is just one-third olive oil. This is called " Larina " Soap, and is delightful for ordinary use.

Krolein Soaps.—Messrs. Reynolds & Branson prepare a number of medicated soaps with a " Krolein " basis. They are exceptionally pure, and are free from injurious perfume or colouring matter. They have a great variety of these soaps, and amongst them Mercury Biniodide ½ per cent and Corrosive Sublimate ½ per cent appear to us very useful for the surgical disinfection of hands.

Metakalin is a cresol in solid form, but easily soluble in water. It is introduced by Messrs. Bayer & Co., Ltd., as an antiseptic and disinfectant for external use. Its active properties are due to meta-cresol, which is the best of the three cresols for this purpose. It is sent out in tablets of 15 grains, which are intended to be dissolved in 4 ounces of hot water, or it may be had in cartridges of 2½ drachms, which should be dissolved in 35 ounces of hot water. The cost is 6d. for ten tablets or one cartridge. It is therefore a cheap as well as easily portable antiseptic, and we should regard it as equally suitable for both surgical or domestic use.

Mist. Carminfans (Ferris).—This is a useful carminative mixture for children, pleasantly flavoured, and containing Sodii Bicarb. and Ammonii Bicarb. with aromatics. It costs ninepence a pound, and is put up by Messrs. Ferris & Co., Bristol.

Mist. Hepatica Concentrated (Hewlett's).—Under this name Messrs. Hewlett & Sons have put up a combination of ext. cascara, ext. rhei, jalapin, podophyllin, cocaine hydrochlor. (gr. $\frac{1}{10}$ to ℥j) and aromatics. This has proved very useful as an aperient and cholagogue in cases where the liver needs stimulating and there is constipation. It is given in doses of 10 to 60 minims.

" Opianthe."—This preparation of opium is manufactured by Messrs. Reynolds & Branson in a most careful manner. It is perfectly stable, miscible with water in all proportions, and may be implicitly relied upon to produce uniform results. It is standardized to contain 0·75 per cent morphine, similar to tinct. opii, B.P., over which it has the advantages of being less nauseous, free from narcotine, resin, and other objectionable constituents of the crude drug. It contains morphine and other valuable alkaloids in combination with organic acids, in a condition such as they occur in opium. Dose 5 to 30 minims.

" Pellanthum."—This is a distinctly novel and much needed application for the skin. It is practically a non-greasy ointment, which dries rapidly, and leaves a covering over the part protecting it from the air, and requiring no dressing or covering over the application. It is quite soluble in water, and differs essentially from collodions and gutta-percha solutions. The numerous cases in which such an application will be useful will at once suggest themselves to our readers, and we may say that it has been used by Dr. Colcott Fox, Dr. Jamieson (of Edinburgh), and others. It is produced by Messrs. Handford & Dawson, of Harrogate, and sold in collapsible tubes at 14/6 and 24/- per dozen. It is prepared also in combination with ichthyol, chrysarobin, and salicylic acid.

Phenate of Soda Solution.—Messrs. Jas. Woolley, Sons & Co., of Manchester, send us a preparation of phenate of soda, which, while possessing all the antiseptic properties of carbolic acid, is less caustic and more palatable. It

is an ideal mouth-wash, and is an excellent application for irritable conditions of the skin, chilblains, burns, etc. It costs 3/- per pint. The same firm also manufacture a phenate of soda tooth-paste, and lozenges, which are very nicely prepared.

Piperidine Tartrate.—The combination of piperidine with tartaric acid forms a pleasant salt, which may be used in doses of 5 to 15 grs. in mineral water, etc., taken at or before meals, in all cases of the uric acid diathesis. It is manufactured by Messrs. Joseph Turner & Co., Ltd., Queensferry, Flintshire, N. Wales.

Quassia Suppositories.—These contain 3 grs. of the extract of quassia, and are intended to be used for children who suffer from thread-worm. We have not had time to investigate this method of treatment, but it appears worthy of a trial, and we should be glad to find that the suppository will take the place of the quassia injection, as it is obviously more convenient. Messrs. R. Sumner & Co., Liverpool, are the manufacturers.

Sal-Ethyl.—Sal-Ethyl, a chemically pure ethyl salicylate, is a transparent, colourless, volatile, oily fluid, possessing several advantages over the natural as well as the artificial methyl salicylates. Salicylic acid, the salicylates, oil of wintergreen, etc., if administered for any length of time, cause severe digestive disturbances, while Sal-ethyl possesses the specific anti-rheumatic action peculiar to the salicylates, and yet does away, to a certain extent, with these disagreeable effects upon the stomach. This is well worthy of extensive trial at the hands of our readers, as it should have some value as a gastric and intestinal antiseptic. It is prepared by Messrs. Parke, Davis & Co.

Santyl (Knoll).—In line with other efforts of the German chemists to improve valuable but rather nauseous drugs, we have now under the name of Santyl, a Sandal-wood oil which is free from smell and taste, which does not cause eructation, or impart a characteristic odour to the breath. It can therefore be given in drops like any other medicine. Messrs. Knoll & Co., of 27, St. Mary-at-Hill, E.C., suggest that it should be given in doses of 30 drops in milk three times a day. Our gonorrhœal patients will be pleased with Santyl (Knoll).

" Sedeff."—To relieve cases of gastric irritation associated with vomiting, or in cases where the vomiting is reflex, such as during pregnancy, Mr. Martindale has put up a mixture of bismuth and digestive ferments, " together with a suitable dose of an opium alkaloid." The preparation is palatable and effective for the purpose it is intended, but we consider that the dose of the alkaloid should be clearly stated. The term " Sedeff " is a contraction of " sedative effervescent."

Sinoleum.—This is an interesting preparation, because although it is an ointment it contains no grease nor oil. It is an excellent excipient for such drugs as iodoform, tar, or ichthyol ; but the sample which we have received contains 50 per cent of liq. ext. hamamelis (distilled), and for a soothing application to an irritable skin, or for the relief of hæmorrhoids, nothing better could be devised. This preparation is made by Messrs. R. Sumner & Co., of Liverpool, who warn us that it must be dispensed in close covered pots or collapsible tubes, as it is liable to become hard by evaporation. The firm supply it in very elegant and suitable pots at 4/6 per dozen, or in tubes at 6/- per dozen.

Sodium Chloride Shells.—In some extremely elegant xylonite boxes, Mr. Martindale dispenses 60 grains of chloride of sodium which, when dissolved in a pint of boiled water, gives a normal salt solution for intravenous injection, The advantage is that the dose is measured and the salt is sterilized.

Somnigen.—This is a dialyzed solution of the hydrobromate of the alkaloids of opium in sherry. It has the same strength as the ordinary tincture of

opium but it is free from the odour, and does not produce the same disagreeable after effects. It is a preparation well worthy of a trial at the hands of our readers. It is made by Messrs. C. J. Hewlett & Son, 35 to 42, Charlotte Street, E.C.

Sterules.—Mr. Martindale has long made a speciality of producing solutions for hypodermic medication in glass capsules, from 1 minim upwards; the result being that the physician is assured of the exact dosage, and that the solution is sterilized. No safer method of preparing hypodermic solutions could be devised. We note this year some advances in this method. A neat japanned metal case contains a hypodermic syringe, and the following

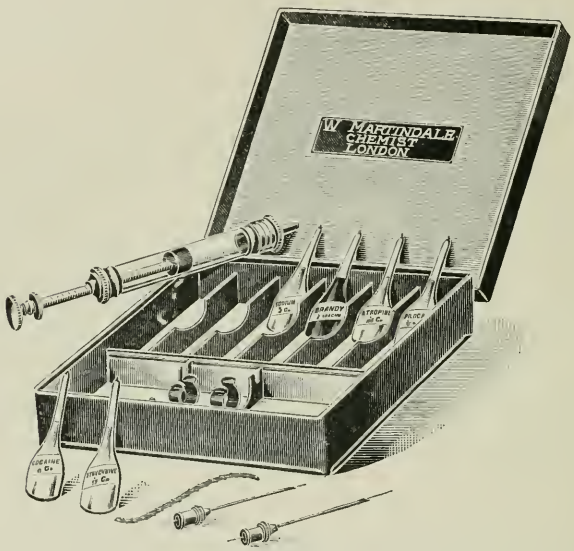

Fig. 104.

assortment of tiny glass flasks, the contents of each being intended for a single dose: Brandy ½ dr., pilocarpine $\frac{1}{10}$ gr. strych. sulph. $\frac{1}{100}$ gr., cocaine $\frac{1}{10}$ gr., ether ½ dr., ferric. cacodylate 1 gr. It will be readily seen how useful such a case would prove in case of emergency. The contents could, of course, be varied to suit the practitioner. This costs, complete, 7/6. The "Sterules" are supplied at 2/- per box of 10 (*Fig.* 104).

We note that the *Capsules of Adrenalin Chloride* are now put up in 15-minim size, in addition to the 10-minim, we noticed last year. The firm apply

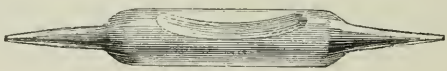

Fig. 105.

the name "Adreucaine" to a combination of adrenalin and eucaine they put up in sterules for dental and general surgery (*Fig.* 105).

Sublamin.—This contains mercury sulphate and ethydene diamine in chemical combination. The effect of the combination is that the irritation of the skin is prevented, and a greater penetrative power secured for the mercury salt,

which does not coagulate the albuminous substances of the skin. It has been used dissolved in water (1 gram to ½-pint) as a disinfectant in puerperal cases, and 1 gram to a quart of water has been used for leucorrhœa. It is sold in 1 gram tablets which cost 10/- per hundred. Messrs. A. and M. Zimmermann, 3, Lloyds Avenue, E.C.

Sulphur and Formaldehyde Candle.—For the disinfection of clothing, living rooms, etc., after infectious diseases, or for destroying vermin, there is nothing better than the above candles, which are supplied by Messrs. R. Sumner & Co., Liverpool. They are most ingenious, for embedded in the sulphur is a retort holding one ounce of formaldehyde, and consequently this evaporates as the sulphur burns. Then the two most active germicides known are let loose together, and no germ can survive. The public Sanitary Authorities are rapidly adopting these candles.

Syr. Iodo. Tannici.—This excellent preparation offers a suitable means of administering iodine in the treatment of glandular enlargements and other diseases in which iodine is indicated. It is palatable, readily taken, and well tolerated by children. Each fluid drachm contains 2 grains of iodine in loose combination with tannic acid. It is prepared by Reynolds & Branson, of Leeds.

Syrup of Glycero-Phosphates (Blake).—We mention this preparation because it does *not* contain the usual iron and strychnia generally combined, but pepsin and malt extract are added. The dose, therefore, can be increased to any extent found desirable. It is made by Messrs. Blake, Sandford & Blake, 49, Dover Street, Piccadilly, W.

Thyroidectin.—This appears as a reddish brown powder prepared from the blood of thyroidectomized animals. In the hands of several careful observers Thyroidectin has proved of much therapeutic value in the treatment of Graves' disease, or exophthalmic goitre. Almost invariably a marked improvement is observed in the subjective and objective symptoms characteristic of the disease. It is supplied in capsules each containing 5 grains, the dose being 1 or 2 capsules three times a day. Messrs. Parke, Davis & Co. are the manufacturers.

Vaginal Suppositories.—"*Chloretone*" contains boroglyceride as a basis, and in addition chloretone, acetanilide, zinc borate, fluid hydrastis, and euthymol. This combination is antiseptic, astringent, and derivative in its effects, and is indicated in the treatment of catarrhal inflammations, such as cervical endometritis, vaginitis, blennorrhagia, etc.

"*Thiodine*" contains a combination of ichthyol, iodine, hydrastine, carbolic acid, glycerin and boro-glyceride, which should be especially valuable in the treatment of purulent inflammations of the uterus and vagina.

Both are prepared in boxes of 1 dozen by Messrs. Parke, Davis & Co.

Violet Leaves.—The discussion respecting the therapeutic efficacy of violet leaves in cancer has induced Mr. H. Wippell Gadd, F.C.S. to make a very elaborate investigation into the pharmaceutical and chemical questions involved in the use of violet leaves. It is as the result of his investigations that Messrs. Evans, Gadd & Co., of Bristol and Exeter, have made a preparation which they call "Liq. Violæ Glucosidi" (Gadd), and which contains almost exclusively the glucoside of the violet leaf 5 per cent, with alcohol 20 per cent. This preparation will enable the profession to make clinical experiments in respect to the value or want of value of violet leaves, as it is only by such experiments that this can be determined. Messrs. Evans, Gadd & Co., have done well to put this means in our power without making any claim at all for the therapeutic properties of the plant; they, very properly, leave this to be determined by the practitioner.

Zymalt (Ferris).—Under this name Messrs. Ferris & Co., of Bristol, manufacture a liquid malt containing its active digestive enzymes. The preparation is very reliable, and we notice that the price is only 1/- per lb., which renders it well within the means of our poorer patients.

They also prepare this with hypophosphite of quinine, iron, calcium, manganese, and strychnine, the dose of the latter being very small, so that it would be quite harmless, even if the preparation was given in large doses. This is only 1/8 per lb., and may be regarded as an excellent tonic and most moderate in price.

DIETETIC ARTICLES.

Brandimintine Liqueur.—This has a delicate green colour and a nice flavour of peppermint. It is a blend of English and American mints with the finest champagne brandy, and makes one of the nicest and most wholesome liqueurs we have examined. Peppermint is an excellent carminative and gastric antiseptic; it prevents fermentation, while the brandy is a direct stimulant of the gastric secretion. A teaspoonful of the liqueur given to patients suffering from flatulent distension of the stomach would be a remedy as effective as agreeable. We feel sure that it will attain wide popularity, because there is no liqueur more wholesome, and none better calculated to bring about post-prandial peace. Messrs. Hall & Gray, 16, Water Lane, E.C., are the agents.

Feeding Apparatus.—We have received particulars of a feeding apparatus, designed by Prof. Soxhlet, for boiling and sterilizing milk and other infants' food, the idea being that the supply required for a whole day can be prepared at once and kept without fear of contamination. If we decide that infants thrive better upon milk which has been sterilized, no better appliance could be devised for the purpose. The agents are Messrs. Reitmeyer & Co., 63, Crutched Friars, E.C.

Fry's Malted Cocoa.—In selecting a dietary suitable for patients of weak digestion, we cannot do better than include Fry's Malted Cocoa, because in addition to being a very nutritious and easily digested beverage, it also aids the assimilation of the various farinaceous foods which usually accompany it at meals. We find that it is appreciated by those who ordinarily do not care for cocoa nor malt extract. The combination is decidedly a happy one.

Hygiama.—This is produced by Theinhardt's Food Co., Ltd., as a food for invalids. It is constructed on the same principle as their infants' food, which we notice below, but is much more concentrated and contains in addition a little cocoa as a flavouring. Compared with similar foods on the market, we are struck by the high percentage of albumin and of phosphoric acid, and the minimal proportion of insoluble carbohydrates. This shows a very thorough dextrinization of the malt of the cereals used in its manufacture. It is very palatable and easily digestible, and may be used with great advantage in those cases where a milk diet is called for, as it covers the taste of the milk. It has met with the highest approval of very distinguished German physicians, amongst them Professors Ewald, Boar, and Erb, and well deserves a trial at the hands of our readers, especially as the price is moderate and compares most favourably with similar foods. Mr. C. Hohmann, 33, Seething Lane, E.C., is the sole agent in this country.

Kopa Food.—This is a nutritious, easily digested food, well suited for the needs of invalids, and much appreciated on account of its pleasant taste.

Kopa Cocoa, another production of the same company, is likely to acquire great popularity on account of its very agreeable flavour. Both will prove useful when a change of diet is found desirable. They are made by the Kopa Co., 38, Quill Lane, Putney, S.W.

Milk Sugar (The Pioneer).—The preparation of humanized milk at home is very simple, and effects a great economy ; which is a matter of considerable importance to many patients. The Pioneer Milk Sugar Co., of 24, Minories, London, E.C., have produced an excellent preparation of milk sugar well suited for the purpose of making humanized milk, and give clear directions which the nurse can easily follow. They estimate that by this method one quart of a mixture closely approximating human milk can be prepared for sixpence. We think that many of our readers will be interested in this matter.

Nut Creams (Concentrated).—This is the fatty matter contained in the nut, that of the cocoanut, almond, and cashew being prepared separately. The flavour is not unpalatable, and the cream represents a very highly nutritious substance, which, diluted with a little water may be spread on bread in place of butter, or shaken up with water it makes a nice cream or milk according to the quantity of water added.

To invalids who object to the flavour of milk these nut creams may be a useful way of administering fat, and they should find a great field in the treatment of consumptive cases. They are also used for making milk or other puddings as a substitute for milk. The cashew and cocoanut creams are less expensive and more nutritious than butter. They are made by Mr. Hugh Mapleton, 2, Dolphin Street, Ardwick, Manchester, and are well worth a trial as a novel means of introducing vegetable fat into the dietary.

Theinhardt's Infant Food.—Chemical analysis indicates that this food compares most favourably with all other foods upon the market, and in fact comes nearest to the ideal normal standard of Prof. König. We should not regard this fact as conclusive evidence of its superiority ; but during the past fifteen years it has been used in Germany, both in hospital and private practice with results which justify the claims of its manufacturers. We should still hesitate to recommend it, unless it was sold at a price which rendered it possible in all classes of practice. There is nothing to justify the extravagant price charged for infants' food. This is sold in England at 2/- for an 18 ounce tin, and its cost works out at from one penny to fourpence-halfpenny a day for infants during the first twelve months, to which must be added the cost of milk.

We think that our readers will be glad to welcome this food and give it a trial in their practice. Mr. C. Hohmann,, 33, Seething Lane, E.C., is the sole agent.

Tritumen.—Under this name Messrs. R. Sumner & Co., of Liverpool have produced a food which may be described as a pure vegetable albumin, containing about 3 per cent of Lecithin (phosphorized fat).

Tritumen is made from wheat, and occurs as a white powder, odourless, and practically tasteless. It contains all the nutritive salts, such as phosphates and chlorides originally present in the grain, so that it constitutes a perfect food. The food is given either alone, mixed with water, milk, or soup, or it may be made into biscuits or bread, a quality which is not usually found in this kind of food.

It is quickly digested and assimilated, and is most valuable in all cases of defective nutrition, during fever, in rheumatism, gout and diabetes, and affords a valuable aid to the diet in kidney disease. The albumin value of one pound of tritumen is claimed to be equal to that of five pounds of lean beef, or 100 eggs. It costs 3/- per lb., so that it is not an expensive addition to the dietary.

Messrs. Sumner & Co. also supply an "Iron Tritumen," which forms a valuable way of administering iron in cases of anæmia and chlorosis, as it has a distinct effect upon the production of hæmoglobin as well as of the red blood corpuscles, although the food only contains 0·4 per cent of iron. Its combination with albumin evidently renders it more assimilable. We are glad to welcome this product of British manufacture.

BOOKS OF THE YEAR.

A List of the Principal Medical Works and New Editions Published during 1905.

*** *For the convenience of our readers any of the works in this list can be obtained from Messrs. J. Wright & Co., "Medical Annual" Offices, Bristol.*

AMBULANCE AND NURSING.

Ambulance Examination Questions: Being a Catechism on Warwick and Tunstall's First Aid to the Injured and Sick. By D. M. Macdonald, M.B. 2nd ed. Interleaved. 12mo, pp. 30. *J. Wright & Co.* (Bristol) *Net 6d.*

Ambulance Illustrated. By M. D. Cullen. 18mo. *Gowans & Gray. Net 6d.*

Ambulance Work. By J. W. Martin. 15th ed. 32mo. *Baillière. Net 1s.*

Ambulance Work and Nursing. A Handbook on First-aid to the Injured. With a Section on Nursing, etc. Roy. 8vo, pp. 312. *Cassell* 6s.

Delicate Children: Care and Management of. By Percy Lewis. Cr. 8vo. pp. 204. *Cassell* - - - - - - - - - - 3s. 6d.

District Nursing: Outlines of Routine in. By M. Loane. *Scientific Press* - - - - - - - - - - - - *Net 1s. 6d.*

Fever Nursing: Manual of. By Reynold Webb Wilcox. Illustrated. Cr. 8vo, pp. 236. *K. Paul* - - - - - - - - - *Net 4s. 6d.*

First Aid Diagrams. On Sheets 40in. by 26in. Being enlargements of the illustrations in "First Aid to the Injured and Sick." By Drs. Warwick and Tunstall. Suitable for Lectures and Classes. Adopted by the War Office, The Admiralty, London School Board, etc. *J. Wright & Co.* (Bristol). 16 sheets, *2s. each*, or *27s. 6d. the set with Nickel Head.*

"First Aid" to the Injured and the Sick. By Drs. F. J. Warwick and A. C. Tunstall. An Advanced Ambulance Handbook. 4th and revised ed. 12mo. *J. Wright & Co.* (Bristol) - - *Cloth 2s. Net, Paper, Net 1s.*

Guy's Hospital Nursing Guide, 1905. Cr. 8vo, pp. 149. *Ash* 1s. 6d.

How to Become a Nurse. The Nursing Profession, How and Where to Train. By Sir Henry Burdett. New and revised ed. Cr. 8vo, pp. 398. *Scientific Press* - - - - - - - - - - - *Net 2s.*

Nursing: Handbook of. For Hospital and General Use. New ed. Cr. 8vo. *Lippincott* - - - - - - - - - *Net 5s.*

Nursing: Hints to Probationers on Practical Work. By Mary H. Annesley Voysey. Cr. 8vo, pp. 116. *Scientific Press* - - - - *Net 2s.*

Nursing: Study in. By Miss A. L. Pringle. 12mo. *Macmillan. Limp, Net 1s.*

Nursing of Infectious Diseases: Lectures upon the. By F. J. Woolacott. Cr. 8vo, pp. 154. *Scientific Press* - - - - - - *Net 2s. 6d.*

Nursing of Sick Children. By James Burnett. Cr. 8vo, pp. 72. *Scientific Press* - - - - - - - - - - *Limp, Net 1s.*

Our Sick and How to Care for Them; or, Plain Teaching on Sick Nursing at Home. By Florence Stacpoole. Cr. 8vo, pp. 154. *Cassell Net 1s. 6d. Sewed, Net 1s.*

Post-Operative Treatment. Dealing with the After-Treatment and Nursing of Surgical Cases. By N. C. Morse, M.D. Roy. 8vo, pp. 475. *Rebman* - - - - - - - - - - - - 17s. 6d.

Sick Nursing: Golden Rules of. By W. B. Drummond, F.R.C.P. ("Golden Rules" Series, No. 15). 32mo. *J. Wright & Co.* (Bristol) *Limp, 1s.*

SURGICAL NURSING: System of. With an Appendix containing Useful Formulæ, Emergency Drill, etc. By A. N. M'Gregor. 8vo, pp. 566. *D. Bryce* - - - - - - - - - - - - *Net* 9*s.*

SURGICAL NURSING and The Principles of Surgery for Nurses. By Russell Howard. Cr. 8vo, pp. 334. *E. Arnold* - - - - - 6*s.*

TROPICAL FEVERS: Nursing of. By S. F. Pollard. *Scientific Press* *Net* 1*s.* 6*d.*

ANATOMY AND PHYSIOLOGY.

ANATOMY: Descriptive and Surgical. By Henry Gray, F.R.S., 16th ed. Edited by T. Pickering Pick, F.R.C.S. and by Robert Howden, M.B. 811 Illustrations. Royal 8vo, pp. xliv & 1,248. *Longmans* - *Net* 32*s.*

ANATOMY: Ellis's Demonstrations of. Being a Guide to the Knowledge of the Human Body by Dissection. 12th ed. Edited by Christopher Addison. Illustrated. 8vo, pp. 862. *Smith, Elder* - - *Net* 12*s.* 6*d.*

ANATOMY AND PHYSIOLOGY: Elements of. By W. Bernard Secretan. Especially adapted for Nurses. Cr. 8vo, pp. 90. *Scientific Press* *Net* 2*s.*

ANATOMY AND PHYSIOLOGY. For Nurses. By L. Lewis. Cr. 8vo. *Saunders* *Net* 7*s.* 6*d.*

ARTISTIC ANATOMY OF THE HUMAN BODY: Elementary. For the use of Art Schools, etc. By J. Fau. 11th ed. 8vo, pp. 48 and Plates. *Baillière* *Net* 5*s.*

ATLAS OF ANATOMY: Edingburgh Stereoscopic. Section 2. Edited by David Waterston. *Jack* - - - - - - - - *Net* 25*s.*

HISTOLOGICAL STUDIES on the Localisation of Cerebral Function. By Alfred W. Campbell. 4to, pp. 380, *Camb. Univ. Press.* *Buckram*, *Net* 18*s.*

HUMAN PHYSIOLOGY: Elements of. By Ernest H. Starling. 7th ed. 321 Illustrations. 8vo, pp. 720. *Churchill* - - - *Net* 12*s.*

HUMAN PHYSIOLOGY: Essentials of, for Medical Students. By D. N. Paton. 2nd ed. 110 Illustrations. *Churchill* - - - - - *Net* 12*s.*

LANDMARKS AND SURFACE MARKINGS of the Human Body. By L. B. Rawling. 2nd ed, 8vo. *Lewis* - - - - - - - - - *Net* 5*s.*

MICROTOMIST'S VADE MECUM: A Handbook of the Methods of Microscopic Anatomy. By A. B. Lee. 6th ed. *Churchill* - - - *Net* 15*s.*

NERVOUS SYSTEM: Physiology of the. By J, P. Morat. Translated by H. W. Syers. With 263 Illustrations, Demy 8vo. - *Net* 31*s.* 6*d*,

NORMAL HISTOLOGY and Microscopical Anatomy. By J. S. Ferguson. 8vo. *S. Appleton* - - - - - - - - - *Net* 21*s.*

PATHOLOGY OF THE ENDOMETRIUM: Contributions to. By J. M. Macgregor. 106 Illustrations, *Churchill* - - - - - - - *Net* 10*s.* 6*d.*

PHYSICAL DIAGNOSIS. By Richard C. Cabot. 3rd ed, revised and enlarged Illustrated. 8vo, pp. 600. *Baillière* - - - - - *Net* 15*s.*

PHYSIOLOGICAL ECONOMY IN NUTRITION. By R. H. Chittenden. 8vo. *Heinemann* - - - - - - - - - - *Net* 14*s.*

PHYSIOLOGICAL PSYCHOLOGY. By W. McDougall. "Temple Cyclopædic Primers." 12mo, pp. 180. *Dent* - - - - - - *Net* 1*s.*

PHYSIOLOGY: Essentials of. By S. P. Budgett. Cr. 8vo. *H. Kimpton* *Net* 4*s.*

PHYSIOLOGY: Handbook of. By W. D. Halliburton. 7th ed. 8vo, pp. 922. *J. Murray.* - - - - - - - - - *Net* 15*s.*

PHYSIOLOGY: Handbook of. For Students and Practitioners of Medicine. By Austin Flint. Illustrated. 8vo, pp. 906. *Macmillan* - *Net* 21*s.*

PHYSIOLOGY: Introduction to. By L. A. H. Lack. *Churchill* *Net* 8*s.*

PHYSIOLOGY: Manual of. With Practical Exercises. By G. N. Stewart. 5th ed. "University Series." 8vo, pp. 930. *Baillière* - *Net* 15*s.*

PHYSIOLOGY: Text Book of. By W. H. Howell. 8vo. *Saunders.* *Net* 18*s.*

PHYSIOLOGY AND BIO-CHEMISTRY: Recent advances in. By Various Authors. Edited by Leonard Hill. With Diagrams. 8vo, pp. 752. *E. Arnold* - - - - - - - - - *Net* 18*s.*

PRACTICAL PHYSIOLOGY. By A. P. Beddard and others. Illustrated. 2nd ed. 8vo, pp. 518. *E. Arnold* - - - - - - *Net 12s. 6d.*

PRACTICAL PHYSIOLOGY: Exercises in. Part II.—Exercises and Demonstrations in Chemical and Physical Physiology. By Augustus D. Waller and W. Legge Symes. Illustrated. 8vo. *Longmans* - - *Net 2s. 6d.*

SURFACE ANATOMY. By T. Gillman Moorhead. Cr. 8vo, pp. 158. *Baillière* *Net 4s. 6d.*

SURFACE ANATOMY. By R. J. A. Berry. 8vo. *Churchill* - *Net 7s. 6d.*

BACTERIOLOGY.

BACTERIOLOGY: The Principles of. By A. C. Abbott. 7th ed. Post 8vo. *Lewis* - - - - - - - - - - - - *Net 12s. 6d.*

BACTERIOLOGY OF PERITONITIS. By Leonard Dudgeon, M.R.C.P. and Percy W. G. Sargent, M.B. 8vo, pp. 256. *Constable* - - - *7s. 6d.*

CLINICAL DIAGNOSIS: The Bacteriological, Chemical and Microscopical Evidences of Disease. By Rudolf v. Jaksch. 5th English ed. Edited by Archibald E. Garrod. 8vo, pp. 628. *Griffin* - - - *Net 24s.*

ELEMENTARY BACTERIOLOGY: Laboratory Guide to. By W. D. Frost. 3rd revised ed. 8vo. *Macmillan* - - - - - *Net 7s.*

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Bristol. — *Brislington House.* Res. Med. Supt., Dr. W. B. Morton. Asst. Med. Off., E. Laval. Access—Brislington, 1¾ miles.

City and County Asylum, Fishponds. Res. Med. Supt., J. Vincent Blachford, M.D. Clerk, Arthur Orme. Access—Fishponds station, 1 mile.

Northwoods House, Winterbourne 7 miles from Bristol. Res. Med. Props., Reginald Eager, M.D., and Mr. W. Eager, L.R.C.P., M.R.C.S. Access—Cab from Bristol, or from Fishponds, Winterbourne, or Patchway stations. *See also p. 726*

Burgess Hill (Sussex).—*St. George's Retreat.* Med. Off., Dr. John A. Cones. Access—Burgess Hill stat.

Buxton.—*Wye House.* Res. Phys., F. K. Dickson, F.R.C.P., and T. G. Dickson, L.R.C.P. Access—Buxton. *See also p. 719*

Cambridge.—*County Asylum*, Fulbourn. Res. Med. Supt., E. C. Rogers, M.R.C.S. Access—Cambridge station, 3½ miles.

Canterbury.—*Stone House*, St. Martin's. Res. Med. Supt., Dr. N. Lavers.

Carlisle.—*County Asylum.* Res. Med. Supt., W. F. Farquharson, M.D. Access—Carlisle, 3 miles.

Carlow.—*District Asylum.* Res. Med. Supt., Dr. J. J. Fitzgerald. Access—Carlow, ¼ mile.

Carmarthen.—*Joint Counties Asylum.* Res. Med. Supt., Edwin Goodall, M.D., F.R.C.P. Access—Carmarthen, 2 miles.

Castlebar (Co. Mayo).—*District Asylum.* Res. Med. Supt., Dr. G. W. Hatchell. Access — Castlebar, 1 mile.

Chartham (near Canterbury).—*Kent County Asylum.* Res. Med. Supt., G. C. Fitzgerald, M.D. Access—Chartham station, 1 mile.

Cheadle.—*Manchester Royal Lunatic Hospital.* Res. Med. Supt., W. Scowcroft, L.R.C.P., M.R.C.S. Access—Cheadle, 2 miles.

Chester.—*Cheshire County Asylum.* Res. Med. Supt., A. Lawrence, M.D. Station, 1½ miles.

Chichester. — *West Sussex County Asylum.* Res. Med. Supt., Dr. H. A. Kidd. Access—Chichester station, 1½ miles.

Church Stretton.—*Stretton House*, Shropshire (for gentlemen). Res. Med. Prop., Horatio Barnett, M.B. Access—Church Stretton station, ½ mile. *See also p. 723*

The Grove House (for ladies). Res. Prop., Mrs. McLintock. Res. Med. Supt., Dr. McLintock. *See also p. 722*

Clonmel. — *District Asylum.* Res. Med. Supt., Dr. Bagenal C. Harvey. Access—Clonmel, 1 mile.

Colchester.—*Eastern Counties Imbecile Asylum.* Res. Supt. and Sec., John J. C. Turner. Access—Colchester.

Cork.—*District Asylum.* Accommodation for 1,300 patients. Res. Med. Supt., Oscar Woods, M.D. Access—Cork, 2 miles.

Cupar (Fifeshire).—*Fife and Kinross District Asylum.* Res. Med. Supt., A. R. Turnbull, M.B. Access—Springfield station.

Darlington (Durham). — *Dinsdale Park.* Res. Med. Supt., H. W. Kershaw, M.R.C.S. Access—Darlington, 5 miles; Dinsdale, 1 mile.

Dartford.—*City of London Asylum*, near Dartford. Res. Med. Supt., Dr. E. W. White. Access—S.E.R. Dartford, 1½ miles.

Denbigh (N. Wales).—*North Wales Counties Asylum.* Med. Supt., Dr. Llewelyn F. Cox. Access—Denbigh, 1 mile.

Derby.—*Borough Asylum, Rowditch.* Res. Med. Supt., Dr. Macphail. Access—G.N.R. station, 1 mile; M.R. 2 miles. *See also p. 721*

County Asylum, Mickleover, Res. Med. Supt., R. Legge, M.D. Access—Derby, M.R. 5 miles; Mickleover, G.N.R. 2 miles.

Devizes.—*Wilts County Asylum.* Res. Med. Supt., J. I. Bowes, M.R.C.S. Access—Devizes, 1 mile.

Dorchester.—*Herrison Asylum.* Med. Supt., P. W. Macdonald, M.D. Access—Dorchester, 3 miles. *See also p. 732*

Downpatrick.—*District Asylum* (for 800 patients). Res. Med. Supt., M. J. Nolan, L.R.C.P.I. & L.M. Access—Downpatrick, 1 mile.

Drumcondra (Co. Dublin).—*Hartfield Retreat.* Med. Prop., Dr. Lynch. Vis. Phys., Dr. Matthew Burke Savage. Access—Dublin, 2 miles.

Dublin. — *Bloomfield*, Morehampton Road. Med. Officer, H. T. Bewley, M.D. Access—Dublin, 1 mile.

Farnham House and Maryville, Finglas (for 56 patients, both sexes). Prop. and Res. Med. Supt., W. R. Dawson, M.D. Access—Cab from Dublin, 3 miles.

Consulting Rooms, 41, Upper Fitzwilliam Street, Dublin. Telephone No. 1470.

Highfield (for ladies), Drumcondra. *Hampstead* (for gentlemen). Glasnevin. Res. Med. Supt., Hy. M. Eustace, B.A., M.D. Access—By rail, Dublin. *See also p. 733*

House of St. John of God, Stillorgan. Res. Phys., Dr. P. O'Connell. Access—Stillorgan station, ½ mile; Dublin, 5 miles.

Richmond District Asylum. Res. Med. Supt., Dr. C. Norman.

St. Patrick's Hospital, James Street. Res. Med. Supt., Dr. R. R. Leeper. Assist. Med. Off., Dr. Parker, St. Edmundsbury. Branch at Lucan. Asst. Med. Off., Dr. A. Burrell.

St. Vincent's Asylum, Fairview. Vis. Med. Supts., Sir Francis R. Cruise, D.L., M.D., and John Murphy, F.R.C.P.I. Apply to the Superioress.

Stewart Institution, Palmerston, Chapelizod. Res. Med. Supt., F. E. Rainsford, M.D. Access—Kingsbridge station, 2¼ miles.

Verville, Clontarf, near Dublin. Med. Prop., Dr. Lynch. Vis. Phys., Dr. M. B. Savage. Access—Dublin.

Woodbine Lodge, Rathfarnham, 6 miles (ladies). Prop., Mrs. Bishop. Med. Supt., Dr. A. Croly. Access—Rathfarnham tram, 2 miles.

Dudley (Stafford).—*Ashwood House*, Kingswinford. Props. Drs. Peacock and Pietersen. Res. Med. Supt., Dr. Pietersen. Access—Stourbridge Junc. 3½ miles, Dudley station, 4 miles; Wolverhampton, 7 miles. *See also p. 731*

Dumfries.—*Crichton Royal Institution*. Med. Supt., J. Rutherford, M.D. Access—Dumfries, 1 mile.

Dundee.—*Royal Asylum and District Asylum*, Liff. Res. Med. Supt., W. Tuach-Mackenzie, M.D. Access—Dundee, 3 miles; Liff, 1½ miles.

Durham.—*County Asylum*, Winterton. Res. Med. Supt., Dr. W. St. J. Skeen, M.B. Access—Sedgefield station, 3 miles, by 'bus.

Middleton Hall, Middleton St. George, Co. Durham. Res. Licen. and Med. Supt., L. Harris-Liston, M.D. Access — Dinsdale station, 1 mile. *See also p. 720*

Earlswood.—*Training Home for the Feeble-minded and Imbecile* (Males 400, females 200). Res. Med. Supt., Dr. Charles Caldecott. Sec., H. Howard, 36 King William St., E.C. Access—Earlswood station or Red Hill Junc., 1½ miles.

See also p. 728

Edinburgh.—*Mavisbank House*, Polton, Midlothian. Res. Med. Supt., G. R. Wilson, M.D. Access—Polton stat., N.B.R., 5 minutes' walk.

Midlothian and Peebles District Asylum (Patients, 350). Res. Med. Supt., R. B. Mitchell, M.D. Access—Rosslynlee station, 1 mile.

Royal Edinburgh Asylum, Morningside. Res. Phys. Supt., T. S. Clouston, M.D. Access — Edinburgh, 1½ miles.

Saughton Hall. Res. Med. Supt. and Prop., Sir J. Batty Tuke, M.D. Access—Princes Street station, 20 minutes.

Elgin.—*District Asylum*. Res. Supt., Alexander Hendry. Vis. Med. Off., J. W. N. Mackay, M.D. Access—Elgin, 1¼ mile.

Ennis.—*District Asylum*. Res. Med Supt., Dr. F. O'Mara. Access—Ennis station, 2 miles.

Enniscorthy (Co. Wexford).—*District Lunatic Asylum*. Res. Med. Supt., Thos. Drapes, M.B. Access—Enniscorthy, 1 mile.

Epsom (Surrey).—*The Silver Birches*, Church Street (for ladies). Access—L. & S.W.R., and L.B.S.C.R., 5 minutes. *See also p. 727*

Exeter.—*City Asylum*, Heavitree. Res. Med. Supt., R. L. Rutherford, M.D. Access—Exeter, 4 miles.

Court Hall, Kenton. Props., The Misses Mules. Vis. Phys., Dr. Lovely. Access—Starcross, 1 mile.

Devon County Asylum, Exminster. Med. Supt., Dr. Arthur N. Davis. Access — Exminster, 1¼ miles; Exeter, 4 miles.

Wonford House (Hospital for the Insane). Res. Med. Supt., P. Maury Deas, M.B., M.S. Lond. Access—Exeter station (Queen Street) 1½ miles; (St. David's), 2 miles.

See also p. 730

Fairford (Gloucestershire).—*Retreat.* Res. Med. Prop., Dr. A. C. King-Turner. Access—Fairford.

Glasgow.—*District Asylum,* Woodilee. Med. Supt., Hamilton C. Marr, M.D. Access—Lenzie station, 1 mile; Glasgow, 8 miles.

District Asylum and Hospital for Mental Diseases, Gartloch. Res. Med. Supt., W. A. Parker, M.B. Access—Garnkirk station.

Govan District Asylum, Hawkhead. Res. Med. Supt., Dr. W. R. Watson. Access—Crookston station.

Kirklands Asylum, Bothwell. Res. Med. Supt., James H. Skeen, M.B. Access—Bothwell and Fallside stations, ½ mile; Glasgow, 9 miles.

Lanark County Asylum. Med. Supt., Dr. N. T. Kerr. Access—Hartwood, 5 minutes.

Royal Asylum, Gartnavel. Res. Phys. Supt., Landel R. Oswald, M.B. Private patients only.

Smithston Asylum, Greenock. Med. Off., Jas. Laurie, M.B. Access—Greenock, about 1½ miles.

Gloucester.—*Barnwood House.* Res. Med. Supt., J. G. Soutar, M.B., C.M. Access—Gloucester, 2 miles.

See also p. 729

Gloucester County Asylums, Wotton and Barnwood, Gloucester. Res. Med. Supt., F. Hurst Craddock, M.A., Oxon., M.R.C.S. Access—Gloucester station, 1 mile.

Great Yarmouth.—*Royal Naval Hospital.* Fleet Surgeon in charge. Access—Great Yarmouth station, 1 mile. For Naval patients only, admitted by Admiralty order.

Guernsey.—*St. Peter Port Asylum.* Med. Supt., E. V. Gibson, M.D.

Haddington.—*District Asylum,* 17 miles from Edinburgh. Med. Supt., J. Bruce-Ronaldson, M.D. Access—Haddington station, 10 minutes.

Hatton (near Warwick).—*County Asylum.* Res. Med. Supt., A. Miller, M.B. Access—Hatton station, 2 miles; Warwick, 3 miles.

Hayward's Heath.—*Brighton County Borough Asylum.* Res. Med. Supt., Edward B. C. Walker, M.D. Access—Hayward's Heath, 1½ miles.

Hellingly.—*East Sussex County Asylum.* Med. Supt., F. R. P. Taylor, M.D.

See also p. 720

Henley-in-Arden (Warwickshire).—*Glendossil* (for both sexes). Res. Prop., Dr. S. H. Agar. Access—Henley-in-Arden, G.W.R., ½ mile.

Hereford.—*County and City Asylum.* Res. Med. Supt., C. S. Morrison, L.R.C.P. Ed. Access—Hereford, 3 miles.

Hitchin (Herts), near.—*Three Counties Asylum.* Res. Med. Supt., S. E. de Lisle, L.R.C.P.I. Access—Three Counties station, 1 mile.

Hull.—*City Asylum.* Res. Med. Supt., J. Merson, M.D. Access—Willerby station, 1 mile.

Inverness.—*District Asylum.* Med. Supt., R. B. Campbell, M.B. Access—Inverness, 2½ miles.

Ipswich.—*Borough Asylum.* Med. Supt., Dr. E. L. Rowe. Access—Ipswich, 2 miles.

Isle of Man.—*Lunatic Asylum,* Union Mills. Med. Supt., W. Richardson, M.D. Access—Douglas, 3 miles.

Isle of Wight.—*The County Asylum,* Carisbrooke. Res. Med. Supt., Harold Shaw, M.B. Access—Blackwater, ¾ mile; Newport, 2½ miles.

Isleworth (Middlesex).—*Wyke House.* Res. Prop., Dr. F. Murchison. Access — Isleworth, Brentford, Osterley station, 1 mile.

Ivybridge.—*Plymouth Borough Asylum.* Res. Med. Supt., W. H. Bowes, M.D. Access—Wrangaton G.W.R., 1½ miles; Ivybridge, 3 miles.

Jersey.—*Cranbourne Hall,* Grouville. Med. Supt., A. C. Stamberg, M.D.

The Grove. Res. Med. Prop., F. N. Gaudin, M.R.C.S. 2½ miles from St. Heliers, 2 from St. Aubin's.

Jersey Asylum. Med. Supt., Julius Labey, M.R.C.S.

Kilkenny.—*District Asylum.* Res. Med. Supt., G. F. West, L.R.C.P. Access—Kilkenny, ½ mile.

Killarney.—*District Asylum.* Res. Med. Supt., Dr. L. T. Griffin. Asst. Med. Off., E. W. Griffin, M.D. Access—Killarney, ½ mile.

Kirkby Lonsdale.—*Greta Bank.* Res. Licensee, Mrs. Taylor. Access—Bentham (M.R.) 2 miles.

Kirkintilloch (near Glasgow).—*Westermains Private Asylum.* For ladies; quiet cases only received. Apply to Mr. Lawrie, Res. Proprietor.

See also p. 728

Knowle (near Fareham).—*County Asylum.* Med. Supt., T. B. Worthington, M.D.

Lancaster.—*County Asylum.* Res. Med. Supt., D. M. Cassidy, M.D. Access—Lancaster, L. & N.W. and Midland stations, each 1¼ miles.

Leeds (Menston, near).—*West Riding Asylum.* Res. Med. Supt., Dr. J. G. McDowall. Access—Menston, 1 mile.

Leek (Stafford).—*County Asylum,* Cheddleton. Med. Supt., W. F. Menzies, M.D. Access — Wall Grange station, 1 mile,

Leicester.—*Borough Asylum.* Res. Med. Supt., J. E. M. Finch, M.D. Access—Leicester.

Leicestershire and Rutland Asylum. Res. Med. Supt., R. C. Stewart, M.R.C.S. Access—Leicester Town, 1 mile.

Letterkenny.—*Donegal District Asylum.* Res. Med. Supt., E. E. Moore, M.D. Asst. Med. Off., J. C. Martin, L.R.C.S.I. Access—Letterkenny and Lough Swilley Rly., 1 mile.

Lichfield.—*County Lunatic Asylum,* Burntwood, near Lichfield. Res. Med. Supt., J. B. Spence, M.D. Access—Lichfield City, 3½ miles; Trent Valley, 4½ miles; Hammerwich, 1½ miles.

Limerick. — *District Asylum.* Res. Med. Supt., Dr. E. D. O'Neill. Access—Limerick station, ½ mile.

Lincoln. — *County Asylum,* Bracebridge. Med. Supt., Dr. G. Parsons Torney. Access—2½ miles from station.

The Lawn. Res. Med. Supt., Arthur P. Russell, M.B. Access—Lincoln station, 1 mile.

See also p. 730

Liverpool.—*Shaftesbury House.* Near Liverpool and Southport. Res. Med. Supt., Stanley A. Gill, B.A., M.D. Access — Formby station, ¼ mile distant. *See also p.* 722

Tue Brook Villa, Liverpool, E. Res. Med. Supt., Dr. J. A. Cooke. (For 52 males and females). Access—Tue Brook station or Green Lane car. *See also p.* 732

London.—*Bethlem Royal Hospital,* St. George's Road, London, S.E. Res. Med. Supt., Theo. B. Hyslop, M.D., M.R.C.P.E. *See also p.* 726

Bethnall House, Cambridge Road, N.E. Res. Med. Supt., J. K. Will, M.D. Access—Cambridge Heath station.

Brooke House, Upper Clapton. Props., Mr. H. T. Monro and Dr. J. O. Adams. Res. Med. Supt., Dr. J. O. Adams. Access—Clapton.

Camberwell House, Peckham Road, S.E. Res. Med. Supt., F. H. Edwards, M.D., M.R.C.P. Asst. Med. Offs., Henry C. E. Quin, L.R.C.S. and E. H. Griffin, B.A., L.S.A. *See also p.* 729

Chiswick House, Chiswick. Lics., Dr. T. S. Tuke; Res., C. M. Tuke. Access—Chiswick station, ½ mile; Turnham Green station, ¾ mile.

Clarence Lodge, Clapham Park, S.W. Lic., Miss F. Leech. Med. Off., Dr. G. F. Blandford. Access—Clapham Rd., and Clapham Common (Electric), 15 minutes.

Featherstone Hall, Southall. Res. Med. Lic., Dr. W. H. Bailey. Access—Southall station, 5 minutes.

Fenstanton, Christchurch Road, Streatham Hill. Res. Med. Supt., Dr. J. R. Hill. Access—Tulse Hill, 5 minutes, and Herne Hill, 15 minutes. *See also p.* 730

Flower House, Catford, S.E. Res. Med. Supt., C. A. Mercier, M.B. Access—C. & D. R. Beckenham Hill, 5 minutes.

Grove Hall, Bow (both sexes). Med. Lics., Mr. Byas and Dr. Mickle. Access—Bow Road and Bow stations, ⅓ mile.

Halliford House, Sunbury-on-Thames, S.W. Res. Med. Supt., W. J. H. Haslett, M.R.C.S. Access—Sunbury station, 1¼ mile.

Hayes. Wood End House (ladies). Uxbridge, 3 miles; London, 12 miles. Med. Lic., Dr. H. Stilwell. Access—Hayes station, 1 mile.

Hayes Park, Hayes, Middlesex, near Uxbridge. Res. Med. Off., Dr. J. W. Higginson. Access—Hayes, 2 miles.

Hendon Grove Asylum (for ladies), Hendon. Med. Lic., F. W. Edridge Green, M.D., F.R.C.S. Access—By M.R., Hendon station, ½ mile, or 'bus from Swiss cottage, St. John's Wood, N.W.

London County Asylum, Banstead Downs, near Sutton, Surrey. Res. Med. Supt., D. J. Jones, M.D. Access—Belmont station, ½ mile; Sutton station, 1½ miles.

London County Asylum, Bexley, Kent. Res. Med. Supt., T. E. K. Stansfield, M.B. Access—Bexley station, 1¼ miles.

London County Asylum, Cane Hill, Coulsdon, Surrey. Res. Med. Supt., Dr. J. M. Moody. Access—Coulsdon, S.E.R., or Stoat's Nest, L.B. & S.C.R., 10 minutes.

London County Asylum, Claybury, Woodford, Essex. Res. Med. Supt., Robert Jones, M.D. Access—Woodford, 1½ miles.

London County Asylum, Colney Hatch, N. Res. Med. Supt., W. J. Seward, M.B. Access—New Southgate, G.N.R.

London County Asylum, Hanwell, W. Res. Med. Supt., Dr. P. J. Baily.

London County Asylum, Horton, near Epsom. Res. Med. Supt., Dr. F. Bryan. Access—L. & S.W.Rly. 1¾ miles.

Middlesex County Asylum, Tooting, S.W. Med. Supt., H. G. Hill, M.R.C.S. Access — Wandsworth Common station, 1 mile.

Moorcroft House, Hillingdon (males). Uxbridge, 2 miles; London, 13 miles. Med. Licensees Dr. Stilwell, and Dr. R. H. Cole. Access—West Drayton, 2 miles.

Newlands House, Tooting Bec Road, S.W. (for gentlemen). Lic. Prop., A. H. Sutherland. Med. Supt., H. J. Hind, M.R.C.S. Access—Balham station, 1 mile, and tram. *See also p. 727*

Northumberland House, Green Lanes, N. Prop., A. H. Stocker, M.D. Res. Med. Supt., Dr. Frank R. King. Access—Finsbury Park station, 1 mile. *See also p. 731*

Otto House, 47, North End Road, West Kensington (for ladies). Lic. Prop., A. H. Sutherland. Lady Supt., Mrs. Chapman. Access—West Kensington station, 1 mile. *See also p. 727*

Peckham House, Peckham, S.E. Prop., Alonzo H. Stocker, M.D. Res. Med. Supt., Harold C. Halsted, M.D. Access—Peckham Rye sta., 10 minutes' walk. *See also p. 730*

St. Luke's Hospital, Old St., E.C. Res. Med. Supt., Wm. Rawes, M.D., F.R.C.S. Convenient to all principal London stations.

See also p. 726

The Grange, East Finchley, N. Res. Licensees, Dr. F. and Mrs. Watson.

The Priory, Roehampton, S.W., near Richmond. Res. Med. Supt., James Chambers, M.D. Access—Barnes station, 10 minutes.

Vine Cottage, Norwood Green, Middlesex. Res. Med. Prop., H. C. Titterton, M.R.C.S. Access—Southall, 1 mile.

West Ham Boro' Asylum, Goodmayes, Ilford. Res. Med. Supt., Dr. D. Hunter. Access—Goodmayes, ¾ mile.

Londonderry.—*District Asylum*. Res. Med. Supt., Dr. Hetherington. Access—Londonderry, 1 mile.

Macclesfield.—*Parkside Asylum*. Res. Med. Supt., T. Steele Sheldon, M.B. Lond. Access—Macclesfield, 1 mile.

Maidstone.—*Kent County Asylum*. Res. Med. Supt., H. W. Lewis, M.D. Access—Maidstone station, 1½ miles.

West Malling Place (for ladies). Castle House and Winthies Cottage (for gentlemen). Res. Med. Supt., Dr. James Adam. Access—Malling station, 1 mile.

Market Lavington (Wilts).—*Fiddington House*. Prop., Major Reilly. Res. Med. Supt., Dr. J. Selfe Lush. Access—Lavington, 1½; Devizes, 6 miles.

Maryborough (Queen's County).—*Maryborough Asylum*. Res. Med. Supt., Dr. P. Coffey. Access—Maryborough, ½ mile.

Melrose, N.B. — *Roxburgh District Asylum*. Res. Med. Supt., J. C. Johnstone, M.D. Access—Melrose, 1 mile.

Melton. — *Suffolk County Asylum*, near Woodbridge. Res. Med. Supt., J. R. Whitwell, M.B. Access—Melton station, 1¼ miles; Woodbridge station, 2½ miles.

Middlesboro'.—*County Boro' Asylum*. Res. Med. Supt., Dr. J. W. Geddes. Access—Middlesboro', 2 miles.

Monaghan (Ireland).—*District Asylum*. Res. Med. Supt., Dr. Edwd. Taylor. Access—Monaghan, ¼ mile.

Montrose, N.B. — *Montrose Royal Lunatic Asylum.* Phys. Supt., John G. Havelock, M.D. Access—Hillside, ¼ mile; Dubton, 1 mile.

Morpeth. — *Northumberland County Asylum.* Res. Med. Supt., Thos. W. McDowell, M.D. Access—Morpeth station, 1 mile, by 'bus.

Mullingar. — *District Asylum.* Res. Med. Supt., Dr. A. Finegan. Access—Mullingar station, 1 mile.

Newcastle-on-Tyne.—*City Asylum,* Gosforth. Res. Med. Supt., James T. Callcott, M.D. Access—Newcastle, 4 miles.

Newton-le-Willows, near (Lanc.)—*Haydock Lodge Asylum.* Res. Med. Prop., Dr. C. T. Street. Access—Newton-le-willows station, L. & N.W.R., 2 miles.

Northampton.—*Berrywood Asylum.* Res. Med. Supt., W. Harding, M.D. Access—Castle station, 2½ miles; Midland station, 3 miles.

St. Andrew's Hospital. Med. Supt. J. Bayley, M.R.C.S. Access—Northampton station, 1 mile.

Norwich.—*Heigham Hall.* Res. Phys. and Prop., J. G. Gordon-Munn, M.D. Med. Off., Dr. A. McWilliam. Access—Victoria station, 1 mile; Thorpe station, 1½ miles.

Norfolk County Asylum, Thorpe (1000 beds). Res. Med. Supt., D. G. Thomson, M.D. Access—Whitlingham stat., 1 mile; Norwich, 2½ miles.

Norwich City Asylum, Hellesdon, near Norwich. Res. Phys. and Supt., Wm. Harris, M.D. Asst. Med. Off., Dr. A. Sykes. Access—Hellesdon, 1 mile.

The Bethel Hospital for the Insane. Res. Med. Supt., J. Fielding, M.D. Cons. Phys., Saml. J. Barton, M.D. Access—Norwich (Thorpe) station, 1 mile. *See also p. 724*

Nottingham.—*City Asylum,* Mapperley Hill. Med. Supt., E. Powell, M.R.C.S.

Notts County Asylum. Med. Supt., A. M. Jackson, M.D. Access—Radcliffe-on-Trent, 2 miles.

The Coppice. Res. Med. Supt., W. B. Tate, M.D. Access—Midland station, 2½ miles; Gt. Northern & Gt. Central station, 1½ miles.

Omagh. — *District Asylum.* Res. Med. Supt., Geo. E. Carre, M.B. Access—Omagh station, 1½ miles.

Oxford.—*Oxford County Asylum.* Res. Med. Supt., R. H. H. Sankey, M.R.C.S. Access—Littlemore sta.

The Warneford, Oxford, 1½ miles. Res. Med. Supt., James Neil, M.D. Access—Oxford station, 2¼ miles.

Paisley. — *Parochial East Asylum.* Med. Supt., T. Graham, M.D. Access—Paisley, 1 mile.

Parochial Asylum, Riccartsbar. Med. Off., D. Fraser, M.D. Access—Paisley West, ¼ mile.

Perth.—*District Asylum,* Murthly. Res. Med. Supt., Lewis C. Bruce, M.D. Access—Murthly.

James Murray's Royal Asylum, Perth (for private patients only). Phys. Supt., A. R. Urquhart, M.D., F.R.C.P. Ed. Access—Perth station, under 2 miles. *See also p. 731*

Plympton. — *Plympton House,* Plympton, South Devon. Res. Med. Supt., Dr. Alfred Turner. Access—Plympton, 1 mile; Marsh Mills, 2 miles; Plymouth, 5 miles.

See also p. 729

Portsmouth.—*Borough Asylum.* Res. Med. Supt., B. H. Mumby, M.D., D.P.H. Access—Fratton, 1½ miles.

Prestwich (nr. Manchester).—*County Asylum.* Res. Med. Supt., Dr. F. Perceval. Acc.—Prestwich, 1 mile.

Rainhill (near Liverpool).—*County Asylum.* Res. Med. Supt., J. Wiglesworth, M.D. Access—St. Helens, 2½ miles; Rainhill, 1 mile.

Rotherham (Yorkshire).—*Thunderclife Grange,* 5 miles from Sheffield (for ladies). Con. Phys., W. C. Clapham, M.D. Res. Phys., G. E. Mould, M.R.C.S., L.R.C.P. Access—Grange Lane station, ¼ mile.

See also p. 732

Salisbury.—*Fisherton House Asylum.* Med. Supt., Dr. Geo. Henderson. All communications to W. C. Finch. Access—Salisbury station, 5 mins.

See also p. 724

Laverstock House. Med. Supt., Hy. J. Manning, M.R.C.S. Access—Salisbury, 1½ miles.

Shrewsbury.—*Salop & Montgomery Counties Asylum.* Res. Med. Supt., D. F. Rambaut, M.D. Access—Shrewsbury station, 2½ miles.

Sleaford.—*Kesteven County Asylum.* Med. Supt., J. A. Ewan, M.D.

Sligo.—*District Asylum.*—Res. Med. Supt., Dr. Joseph Petit. Access—Sligo station, 1½ miles.

Stafford.—*County Asylum.* Res. Med. Supt., Dr. J. W. S. Christie. Access—Stafford, 1 mile.

Institution for the Insane, Coton Hill. Res. Med. Supt., Dr. R. W. Hewson. Access—Stafford, 1 mile.

See also p. 721

Starcross (near Exeter).—*Western Counties Idiot Asylum.* Res. Supt., E. W. Locke. Access—Starcross station, 5 minutes.

Stirling.—*District Asylum.* Med. Supt., Dr. George M. Robertson. Access—Larbert, 1½ miles.

St. Albans (Hill End).—*Herts County Asylum.* Med. Supt., A. N. Boycott, M.D. Access—Hill End station, G.N.R., 2 minutes.

St. Leonards-on-Sea.—*Ashbrook Hall,* Hollington (for ladies). Res. Props., Mrs. Hitch and Miss Adams. Med. Supt., Dr. E. Kaye Smith. Access—Warrior Square station, 2 miles.

Stone (near Aylesbury).—*Bucks County Asylum.* Res. Med. Supt., J. Humphry, M.R.C.S. Access—Aylesbury station, 3¼ miles.

Sutton (Surrey).—*Chalk Pit House* (licensed for 3 lady patients). Prop., F. D. Atkins, M.R.C.S.

Tamworth (Staffs.).—*The Moat House* (for ladies). Res. Prop., E. Hollins, M.A. Access—Tamworth ¾ mile.

See also p. 723

Taunton.—*Somerset & Bath Asylum,* Cotford, near Taunton. Res. Med. Supt., Mr. H. T. S. Aveline. Access—Norton Fitzwarren station, 2 miles.

Ticehurst (Sussex).—*Asylum.* Props., Drs. H. & A. Newington. Access—Ticehurst Road 3 miles, Wadhurst S.E. & C.R., 4 miles.

Tonbridge.—*Redlands.* Res. Med. Supt., W. A. Harmer. Access—Tonbridge junc., S.E. & C.R., 2½ miles.

Virginia Water.—*Holloway Sanatorium,* Hospital for the Insane. St. Ann's Heath. Res. Med. Supt., W. D. Moore, M.D. Asst. Med. Offs., W. Tinker, L.R.C.P., T. E. Harper, L.R.C.P., G. W. Smith, M.B., Sheila M. Ross, M.B. Access—Virginia Water station, 5 mins. Seaside Branch, Hove Villa, Dyke Road, Brighton. Med. Off., E. N. Edwards, M.R.C.S.

See also p. 728

Wadsley (near Sheffield).—*South Yorkshire Asylum.* Res. Med. Supt., W. S. Kay, M.D. Access—Wadsley Bridge, 1 mile.

Wakefield.—*West Riding Asylum.* Res. Med. Supt. and Director, W. B. Lewis, L.R.C.P., M.R.C.S. Access—Kirkgate and Westgate sta., 1 mile.

Wallingford (Berks).—*Berkshire Asylum.*—Res. Med. Supt., J. W. A. Murdoch, M.B. Access—Cholsey, 1 mile.

Warwick.—*Midland Counties Asylum,* Knowle, near Birmingham (for feeble-minded children). Sec. and House Gov., A. H. Williams. Med. Off., R. H. Foster, M.R.C.S. Access—Knowle, ½ mile.

Waterford.—*District Asylum.* Res. Med. Supt., J. A. Oakshott, M.D. Access—Waterford and Kilkenny station, 2 miles.

St. Patrick's Inst., Belmont Park. Conducted by the Brothers of Charity. Med. Supt., W. R. Morris, M.B.

Wells.—*Somerset and Bath Asylum,* Wells, Som. Res. Med. Supt., Dr. G. Stevens Pope. Access—Wells, 2 miles; Masbury, 2½ miles.

Whitchurch (Salop).—*St. Mary's House* (ladies only). Res. Med. Supts., S. T. Gwynn, M.D., & C. H. Gwynn, M.D. Access—Whitchurch, 1 mile.

Whitefield (near Manchester).—*Overdale.* Vis. Phys., G. E. Mould, M.R.C.S. Access—Prestwich and Whitefield station, 1½ miles; Molyneux Brow, ¼ mile.

Whittingham (nr. Preston).—*County Asylum.* Res. Med. Supt., Dr. J. F. Gemmel. Access—Grimsargh station, 1¾ miles; Whittingham station, 3 minutes.

Winchelsea (Sussex).—*Periteau House,* near Hastings (5 ladies). Prop., Mrs. R. V. Skinner. Med. Supt., E. W. Skinner, M.D. Access—Winchelsea station, 1 mile.

Witham (Essex).—*The Asylum* (Licensed for both sexes). Apply to the proprietor.

Woking.—*Surrey County Asylum,* Brookwood. Res. Med. Supt., Dr. J. E. Barton. Access—Brookwood station, 1¼ miles.

Worcester.—*County & City Lunatic Asylum*, Powick. Res. Med. Supt., Dr. G. M. P. Braine-Hartnell. Access—Worcester station, 4 miles.

York.—*The Pleasaunce* (ladies only). Prop. & Med. Supt., G. I. Swanson, M.D. Access—York, 1½ miles.

See also p. 720

The Retreat. Res. Med. Supt., Bedford Pierce, M.D. Access—York station, 1½ miles.

See also p. 723

North Riding of Yorkshire Asylum, Clifton. Res. Med. Supt., A. J. Eades. Access—York station, 2 miles.

Bootham Park, Bootham. Res. Med. Supt., C. K. Hitchcock, M.D., M.A. Cantab. Access—York station, 1 mile.

TRAINING INSTITUTIONS.

Bath.—*Rock Hall House*, Combe Down, near Bath (for backward and imbecile children). Lady Supt., Miss Jane Quinton. Med. Off., J. L. Beath, M.D. Clerk, E. N. Fuller, LL.B., Bath. Access—G.W.R., 1½ miles.

Chilcompton (near Bath).—*Downside Lodge* (for ladies of weak intellect). Med. Supt., Alex. Waugh, M.D. Access—Chilcompton, about ¼ mile.

Dublin.—*Stewart Institution*, Palmerston, Chapelizod, Co. Dublin (for imbecile children). Med. Supt., Dr. F. E. Rainsford.

Dundee.—*Baldovan Asylum* (for the training and education of imbecile children). Matron, Miss Butter. Med. Off., D. M. Greig, F.R.C.S. Access—Baldovan, 1 mile.

Kingston Hill.—*Winchester House* (for backward and feeble-minded children). Res. Med. Supt., Dr. Fletcher Beach. Access—Norbiton station, S.W.R., 15 minutes.

See also p. 708

Kingston-on-Thames (Surrey).—*Normansfield, Trematon & Conifers* (for backward and feeble-minded of either sex). Res. Med. Supt., Dr. Langdon Down. Access—Hampton Wick station, 8 minutes.

Lancaster.—*The Royal Albert Asylum* (for the feeble-minded of the Northern Counties; 650 patients). Principal and Sec., Jas. Diggens, J.P. Res. Med. Off., Dr. A. R. Douglas. Access—Lancaster, 1 mile.

Brunton House. A Home for special Private Pupils under training at the Royal Albert Asylum.

Larbert (Stirlingshire).—*Scottish National Institution* (for education of imbecile children). Res. Supt., A. A. Skene. Med. Officer, Dr. R. D. Clarkson. Sec. & Treas., A. J. Fitch, Virginia Buildings, Glasgow. Access—Larbert station, ¾ mile.

London (Upper Norwood, S.E.).—*Grosvenor* (for boys), 84, Auckland Road. Supt., Miss Arkell.

Richmond (Surrey).—*Ancaster House*, Richmond Hill (a small and select educational establishment for the special training of backward or neurotic children). Res. Med. Supt., G. E. Shuttleworth, B.A., M.D. Access—Richmond, S.W.R., Met. Dist. and N.L.R., 1 mile.

See also p. 709

Southgate (Middlesex).—*Brook House* (for children). Res. Med. Prop., Harry Corner, M.D.

SANATORIA FOR TUBERCULOSIS.

The Editors desire to make this List as complete as possible, and will be obliged if authorities connected with any Sanatorium or Establishment in which "open air" or so-called hygienic methods of Treatment are employed, and the name of which does not appear below, will communicate with them in order that particulars may, if possible, appear in next year's issue of the *Medical Annual*.

Axbridge (Somerset).—*St. Michael's Home* (41 beds, 24 male and 17 female). Apply to Sister in Charge. Med. Off., R. W. Statham, M.R.C.S. Access—Axbridge station. Terms free.

Banchory (Scotland).—*Nordrach-on-Dee* (54 beds). Res. Phys., D. Lawson, M.A., M.D. (Ed.), J. S. Cooper, M.D., I. S. Stewart, M.D. Access—Banchory station, 2 miles, *via* Aberdeen.

Belbroughton (Worcs.). — *Midland Open-air Sanatorium*, Bourne Castle (24 beds). Apply, Secretary. Res. Med. Off., Geo. F. Phillpot, M.R.C.S. Access—Hagley, G.W.R.; Bromsgrove, M.R.

Bournemouth. — *Alderney Manor*, Parkstone (26 beds). Res. Phys., Dr. W. Denton Johns. Access—Parkstone station, 2 miles.

Overton Hall, Poole Road (12 beds). Res. Prop., Dr. C. Guthrie Stein. Access — Bournemouth West, 7 minutes.

Royal National Sanatorium for Consumption and Diseases of Chest (85 beds). Sec., A. G. A. Major. Res. Phys., H. L. Laurie, M.B. Access — Bournemouth station, 1 mile. Terms 7/6 per week and a Governor's nomination.

The Firs Home (for advanced cases), (20 beds). Hon. Sec., Percy J. Duncan, M.D., Frogmore, Bournemouth. Hon. Med. Offs., A. E. B. Love, M.R.C.S., and P. J. Duncan, M.D. Lady Supt., Miss MaGuire.

The Home Sanatorium, Southbourne Road. Res. Phys., J. R. Morton, M.B. Access—Bournemouth Central, 2½ miles; Boscombe, 1½ miles; Christchurch, 2½ miles. *See also p.* 716

Bridge of Weir (Renfrewshire).—*Consumption Sanatoria of Scotland.* (80 beds, females; 54 beds, males). Hon. Sec., J. P. Maclay, Esq., 21, Bothwell St., Glasgow. Med. Supt., D. S. Macfoll, M.D. Access—Bridge of Weir, 2 miles.

Brighton. — *Municipal Sanatorium*, for Brighton townsfolk. Object: mainly educational. Physician, Dr. Arthur Newsholme, M.O.H. for Brighton. Particulars, Town Hall, Brighton.

Chagford (Devon).—*Dartmoor Sanatorium*, (near Exeter, Newton Abbot and Okehampton). Res. Med. Supt. and Prop., Dr. A Scott Smith. Access—Moretonhampstead, G.W.R., 6½ miles; Okehampton station, L. & S.W.R., 11 miles.

Cheddar (Somerset).—*Engel Home*, for females only (20 beds). Med. Supt., R. W. Statham, M.R.C.S. Apply to Lady Supt. Access—Cheddar station, 10 minutes.

Cheltenham.—*Cotswold Sanatorium.* Res. Phys., Dr. F. K. Etlinger. Address — Cotswold Sanatorium, near Stroud. *See also p.* 711

Chiltern Hills Sanatoria.—*Kingwood* (14 beds) and *Maitland Cottage* (for working classes, 18 beds), Peppard Common, Oxon. Res. Med. Prop., Dr. Esther Colebrook Carling. Access—Reading, 6½ miles.

See also p. 717

Clare (Suffolk).—*Richmond House* (15 beds). Med. Supt., G. H. Metcalfe, M.R.C.S. Access—Clare station, 5 minutes.

Colwyn Bay (N. Wales).—*Haner-y-Ffordd Hygienic Home.* An open-air residence for patients who have undergone sanatorium treatment. Proprietor, Miss Matthews.

Crieff (Perthshire).—*Ellerslie Sanatorium.* Res. Prop., Thompson Campbell, M.D. Access—Caledonian Railway, Crieff station, ½ mile.

See also p. 718

Devon and Cornwall *Sanatorium*, Didworthy, South Brent. For consumptive poor of the two counties. Hon. Sec., S. Carlisle Davis, Esq., 28, Westwell street, Plymouth. Res. Med. Supt., Dr. J. C. Fleming. Access—Brent, G.W.R., 2 miles.

Dorking (Surrey). — *Woodhurst Sanatorium* (for Ladies and Girls only), Tower Hill (16 beds). Sec., Geo. Wright. Visiting Phys., Miss Mary R. McDougall, M.B., C.M. Ed. Access—L.B. & S.C.R. and the S.E. stations, both about 1 mile.

Terms: from 1½ guineas weekly, according to bedroom accommodation.

Dundee (nr.), *Sidlaw Sanatorium* (40 beds). Res. Phys., A. K. Traill. Access—Auchterhouse station, 1½ miles.

Durham.—*Durham County Consumption Sanatorium*, Stanhope (45 beds, 30 male and 15 female). Sec. Mr. F. Forrest, 54, John Street, Sunderland. Med. Supt., Dr. John Gray. Access—Stanhope station, 1 mile. Terms free and by payment.

Edinburgh, Craigleith.—*Royal Victoria Hospital for Consumption* (60 beds). For the treatment of poor patients. Visiting Physicians, Dr. R. W. Philip and Dr. G. L. Gulland. Clerk and Treasurer, 4a, St. Andrew Square, Edinburgh.

Woodburn, Morningside (20 beds). Res. Med. Prop., Mrs. W. P. Mears, L.R.C.P.I., with Resident and Cons. Physician.

Eversley (Hants). — *Moorcote* (15 beds). Med. Supt., H. O. Grenfell, L.R.C.P. Access—Wellington College station, 4½ miles ; Wokingham station, 6 miles.

Farnham (Surrey). — *Crooksbury Sanatorium* (24 beds). Res. Phys., Dr. Rufenacht Walters. Access—Farnham station, 3½ miles ; Tongham, 2½ miles ; Ash, 4 miles.

See also p. 717

Whitmead Sanatorium. Res. Phys., J. Hurd-Wood, M.D. and H. G. Pesel, M.D. Access—Farnham station, 3½ miles.

Fortbreda, Belfast.—*Forster Green Consumption and Chest Hospital* (38 beds). Vis. Phys., Drs. R. J. Purdon, J. Simpson, F. Howard Sinclair. Sec., A. Shaw, 2, May Street, Belfast. Access—Belfast, 2 miles. Mainly for the poor ; 6 beds free ; others by small payment.

Hastings.—*Fairlight Hall Convalescent Home,* Old London Road, Ore, in connection with Margaret Street Hospital for Consumption and Diseases of the Chest (for Out-Patients), 26, Margaret Street, London, W. (22 beds). Sec., Alice D. Brookes. Med. Off., Dr. N. F. Stallard. Access—Hastings, Motor bus, about 15 minutes. Payments, by subscriber's letter, 11/6.

Hull.—*Hull and East Riding Convalescent Home,* Withernsea (30 beds). Sec., Benjmn. Brooks, Royal Infirmary, Hull. Med. Off., A. E. Sproulle, L.R.C.P. Access—Withernsea station.

Ireland.—See Fortbreda, Warrenpoint and Wicklow.

Isle of Wight.—*Church Hill House,* Ventnor (Private Sanatorium). Matron, Miss Moyse-Hopkins.

Royal National Hospital for Consumption, Ventnor. Sec., Ernest Morgan, 34, Craven Street, Charing Cross, W.C. Res. Med. Officer, L. Crossley, M.D. Terms 10/- per week by recommendation from Governors.

St. Catherine's Home, Ventnor (for advanced cases). (12 beds, 6 male and 6 female). Apply to Sister Bernardine. Med. Officer, H. F. Bassano, M.A., M.B. Access—Ventnor, 5 mins. drive. Terms, by selection, 10/6 per week.

Jersey.—*Pinehurst Sanatorium.* Res. Physician, Dr. J. S. Newington.

Kingussie (Inverness-shire, Scotland).—*The Grampian Sanatorium,* (20 beds). Res. Physician, Walter de Watteville, M.D. Access—Main Highland Rly., Kingussie, ¾ mile.

Kinrosshire (Scotland).—*Ochil Hills Sanatorium* (60 beds). Sec., D. Hill Jack, 141, West George Street, Glasgow. Res. Phys., Dr. Neill and Dr. Watt. Access—Kinross junction, 4 miles.

Kirkmichael (Scotland).—*Knocksualtach* (6 beds). Med. Supt., Mary F. Nanetti, L.R.C.P. Access—Blairgowrie station, 13 miles, from which coaches run.

Leeds.—*Leeds Sanatorium for Consumptives,* Gateforth, near Selby (34 beds), and *Leeds Hospital for Consumptives,* Armley (36 beds). Sec., C. H. Sedgwick, 37, Great George St., Leeds. Terms free, for poor of Leeds.

Leslie (Fife).—*Walkerton Sanatorium.* Apply Secretary.

Liverpool.—*Liverpool Sanatorium for Consumptives,* Kingswood, Frodsham (40 beds). Sec., Alfred Shawfield, 77*a*, Lord St., Liverpool. Res. Phys., Dr. Herapath Wood. Access—Frodsham, L. & N.W.R. 3½ miles.

London.—*Brompton Hospital for Consumption and Diseases of Chest.* Sanatorium at Heatherside, Frimley, containing 100 beds. W. H. Theobald, Sec.

City of London Hospital for Diseases of Chest, Victoria Park, E. Open-air treatment provided. (164 beds). Sec., H. Dudley Ryder.

Margaret Street Hospital for Consumption and Diseases of the Chest (for Out-Patients), 26, Margaret St., W. No beds in London. See *Hastings.*

Mount Vernon Hospital for Consumption and Diseases of the Chest, Hampstead (150 beds). Access—Finchley Road (Met.) station, 1 mile. The *Country Branch Hospital at Northwood,* accommodates 100 cases. Access—Northwood (Met.) station. Hon. Vis. and Res. Staff. Free on recommendation of governors. Secretary, W. J. Morton.

Royal Hospital for Diseases of the Chest, 231, City Road, E.C. (80 beds). Med. Off., E. G. Pringle, M.D. Apply to the Sec. Terms by letter.

Long Stratton (Norfolk).—*Fritton Sanatorium* (7 beds). Res. Phys., Miss Mary Smith, L.R.C.P. Matron, Miss Wainwright. Access—Forncett station, G. E. 4 miles; Norwich, 10 miles.

Maldon (Essex).—*The Sanatorium*. Med. Offs., H. L. Ewens, M.D., and Dr. W. E. Facey. Access—Maldon, 1½ miles.

Manchester.—*Hospital for Consumption and Diseases of Throat and Chest*. Sanatorium at Bowdon, Cheshire. (For poor and working classes, after personal examination at Manchester.) Sec., C. W. Hunt, Manchester. Res. Phys., E. E. Hughes, M.B. Access—Bowdon station, ½ mile.

Margate (Kent).—*Royal Sea-bathing Hospital* (150 beds). Sec., A. Nash, 13, Charing Cross, London, S.W. Two Res. Surgs. Access—Margate West, ¼ mile. Terms, for four weeks stay, £2 8s. or £1 12s., according to age, for patients with Governor's recommendation. *See also p. 739*

Meathop (near Grange).—*Westmoreland Sanatorium*. Res. Med. Supt., T. H. J. Hughes, M.R.C.S. Hon. Sec., Dr. W. Rushton Parker, Kendal. Access—Grange-over-Sands station, 2½ miles.

Mendip Hills, Blagdon, near Bristol.—*Nordrach-upon-Mendip* (40 beds). Res. Phys., R. Thurnam, M.D. Assist. Phys., Chas. Wheeler, M.D. Access—Wells or Cheddar, 8 miles; Langford station, 5 miles. Yatton Junc. 11 miles. Terms, 4 to 6 gns. weekly. *See also p. 711*

Nayland (Suffolk).—*East Anglian Sanatorium* (35 beds), and *Maltings Farm Sanatorium* for 16 poor men and 16 women patients. Med. Supt., Dr. Jane Walker, 122, Harley Street, W. Access—Bures station, G.E.R., 3½ miles.

Norfolk.—*Kelling Sanatorium*, Holt. Assistance given to poor patients unable to pay. Hon. Sec., Dr. H. W. McConnel. Res. Med. Off., Mr. W. J. Fanning. Access—Holt station, *via* Norwich.

Mundesley Sanatorium, Mundesley (30 beds). Res. Physician, S. Vere-Pearson, M.B. Access—Mundesley station, 1 mile.

Nottingham.—*Sherwood Forest Sanatorium*, for persons of limited means, resident in Notts and district (30 beds). Sec., G. Sheldon, 36*a*, Bridlesmith Gate, Nottingham. Res. Med. Off., Miss Ida E. Fox, M.D. Access—Mansfield, 3 miles. Free, or for 10/- per week, on recommendation of subscribers.

Ockley *Sanatorium* (Surrey). Res. Phys., Dr. Clara Hind. Access—Ockley, L.B. & S.C.R., 1 mile.

Okehampton (Devon).—*Dr. Rashleigh's Sanatorium*, Throwleigh. Res. Phys., J. C. S. Rashleigh, M.D. Access—Okehampton, L. & S.W.R.

Paignton (Devon).—*Dunstone Park* (10 beds). Res. Phys., T. Carson Fisher, M.D. Access—Paignton station, 1½ miles.

Painswick (Glouc'stershire). *Painswick Sanatorium, Cotswold Hills*. Res. Phys. and Prop., W. McCall, M.D. Access—Stroud, 4 miles; Gloucester, 6 miles.

Peebles.—*Manor Valley Sanatorium*, Caverhill. Med. Supt.,

Penmaenmawr (N. Wales).—*Nordrach in Wales, Pendyffryn Hall* (18 beds). Res. Prop., Dr. G. Morton Wilson. Access—Penmaenmawr station, 2 miles; Conway, 3 miles.

Portbury (Som.).—*Luftkur Sanatorium*. Access—Portbury, G.W.R., 1½ miles; Flax Bourton, 3½ miles.

Ringwood (Hants).—*Linford Sanatorium* (24 beds). Props. and Res. Phys., R. M. Smyth, M.D., and H. G. Felkin, M.D. Access—Ringwood station, 2½ miles.

Rudgwick (Sussex).—*Rudgwick Sanatorium* (14 beds). Res. Lady Med. Officer in charge. Access—Rudgwick station, 5 minutes; Horsham station, 7 miles.

Ruthin (N. Wales).—*Vale of Clwyd Sanatorium, Llanbedr Hall*. Res. Props., Drs. G. A. Crace-Calvert and C. E. Fish. Access—Ruthin station, 2 miles. *See also p. 711*

Sandon, near Danbury (Essex).—*Merivale Sanatorium*. Res. Phys., H. N. Marrett, M.R.C.S. Access—Chelmsford station, 4 miles.

Shotley Bridge (Durham). — *Belle Vue Sanatorium* (15 beds). Res. Prop., Dr. E. W. Diver. Access—Shotley Bridge station, 1 mile.

St. Leonard's.—*Eversfield Hospital*, West Hill (55 beds, including 8 private wards). Sec., Miss Benwell. Res. Phys., T. Gambier, M.D. Fees, 17/- weekly, or 13/- with subscriber's letter, available 4 weeks. Access—West St. Leonard's S.E.R., West Marine L. B. and S.C.R., within 5 minutes' walk.

Torquay.—*Mildmay Consumptive Home* for advanced cases only (10 beds). Hon. Med. Offs., F. D. Crowdy, M.D. and H. P. Wiggin, M.R.C.S. Hon. Sec., Miss F. Gumbleton, Connemara, Torquay. Access—Torquay, 1 mile. Fees, 10/6 weekly, or 7/- with subscriber's letter.

Western Hospital (40 beds). Open Oct. to May. Sec. F. Manley. Terms, 7/6 by nomination, 12/6 without.

Wallingford (Berks).—*Hailey Sanatorium*, Ipsden (25 beds). Res. Med. Supt., F. S. Arnold, B.A., M.B. Access—Goring station, G.W.R., 4 miles; or Wallingford, 4 miles.

Warrenpoint (Co. Down).—*Rostrevor Sanatorium*. Res. Phys., F. Howard Sinclair, M.D. High Frequency Electrical Installation. Access—Warrenpoint. Terms, 3½ guineas.

See also p. 718

Wells (Somerset). — *Mendip Hills Sanatorium* (25 beds). Chief Phys., D. J. Chowry Muthu, M.D. Apply Res. Sec. Access—Wells station, 2¾ miles. Terms, 2½ to 3½ guineas.

See also p. 716

Wicklow.—*Altadore Sanatorium*, Kilpedder, Co. Wicklow (22 beds). Res. Phys., Dr. J. C. Smyth. Access—Dublin to Greystones, from which it is 5 miles.

The Royal National Hospital for Consumption for Ireland, Newcastle, Wicklow (48 beds for men, 52 for women). Hon. Sec., J. R. Orpen, 13, South Frederick Street, Dublin. Res. Phys. and Registrar, B. H. Steede, M.D. Access—D.W.W.R. to Newcastle, Co. Wicklow, 3 miles. Minimum fees, 7/- weekly, on subscriber's recommendation and medical examination.

Wokingham.—*London Open-air Sanatorium* (64 beds). Sec., H. W. Harris, 20, Hanover Square, London. Res. Phys., Dr. R. A. Stevenson. Access—Wellington College, S.E.R., 1½ miles; or Bracknell, L.S.W.R., 4 miles.

INSTITUTIONS FOR INEBRIATES.

Licensed under the Acts, 1879-1900.

The patient must sign a Form expressing a wish to enter the Home, before a magistrate. This can be done at the private residence of the patient, or at the retreat, if previous notice has been given. Two friends must also sign a declaration that they consider the patient an "Inebriate" within the meaning of the Acts.

* Note:—Ashford, Chiswick, and Spelthorne St. Mary, are Roman Catholic Religious Institutions † Cradley Heath, Herne Hill, King's Lynn, and Torquay, are C.E.T.S. Institutions.

Males Only.

Battle (Sussex).—*Hancox House*. (Patients 20). Res. Supt., B. Ewart Gott. Med. Supt., W. W. Jones, M.D.

Buntingford (Herts). — *Buntingford House Retreat* (Patients 25). Two Res. Med. Supts. Access—Buntingford, G.E.R., 8 minutes.

See also p. 736

Cockermouth (Cumberland). — *The Ghyll Retreat*, Res. Med. Supt., J. W. A. Cooper, L.R.C.S.

Colinsburgh (Fife).—*Invernith Lodge Retreat*. Res. Med. Supt., Dr. J. Q. Donald. Access—Kilconquhar station.

See also p. 735

Dinas Mawddwy (Merionethshire).—*Plâs-yn-Dinas* (Patients 17). Res. Med. Supt. and Licensee, Dr. W. F. Walker, J.P. Access—Cemmes Road.

See also p. 737

Folkestone.—*Capel Lodge* (Patients 10). Res. Prop., E. Norton, M.D. Access—Folkestone Junction, 2 miles.

Nairn, N.B.—*Larkfield.* Res. Prop., Dr. H. W. Mann. *See also p. 733*

Rickmansworth (Herts).—*Dalrymple House* (Patients 20). Res. Med. Supt., F. S. D. Hogg, M.R.C.S., L.R.C.P. Access—Rickmansworth station, Metropolitan Railway, ½ mile; L. & N.W.R., 1 mile.

See also p. 736

Thundersley (Essex). — *Salvation Army Retreat* (Patients 20). Res. Supt., Chas. Halsey. Access—Rayleigh, G.E.R., 3 miles.

Twickenham. — *High Shot House.* (Patients 12). Res. Med. Supt., W. F. Chevers, L.R.C.P. Access—St. Margaret's station from Waterloo, 300 yards; Richmond, 1½ miles.

Telegrams: "Chevers, High Shot. Twickenham." Telephone: "P.O. Richmond 523."

MALE AND FEMALE.

Bristol. — *Brentry,* Westbury-on-Trym, for cases arising under the Licensing Act, 1902 (Patients 50). Res. Supt. and Med. Off., Dr. Fleck. Hon. Sec., Rev. H. N. Burden. Access—Clifton Down station, 3½ miles.

Maldon (Essex).—*Rivermere,* Osea Island. Res. Med. Supt., F. F. Moore, L.R.C.S.I.

FEMALES ONLY.

Ashford, near Staines.*—*Ecclesfield,* Apply to the Mother Prioress.

See also p. 734

Beverley (E. Yorks).—*Albion House* (Patients 22). Res. Supt., the Matron. Hon. Sec., Mrs. T. R. Pentith, Sutton-on-Hull.

See also p. 734

Chiswick.*—*St. Veronica's Retreat* (Patients 40). Under the care of the Sisters of Nazareth. Med. Supt., John J. Atteridge, M.D. Access—Chiswick station, ½ mile.

Cradley Heath† (Staffs). — *Corngreaves Hall* (Patients 32). Lic., Miss E. Eaves. Hon. Secretary, J. H. Broscomb, Stanhope, Gravelly Hill, Birmingham. Access—Cradley and Old Hill stations, 1 mile.

See also p. 737

Fallowfield. — *The Grove Retreat,* near Manchester (Patients 25). Licensee, Mrs. M. Hughes. Med. Offs., A. T. Wilkinson, M.D., J. W. Hamill, M.D., and Dr. Margaret Bell. Hon. Treas., S. Gamble. Fallowfield station, 10 minutes.

See also p. 733

Herne Hill.†—*Ellison Lodge,* Half Moon Lane (Patients 33). Res. Supt., Miss Forsyth. Med. Supt., Dr. P. Barham. Access—Herne Hill.

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Hounslow (Middlesex).—*West Holme.* Supt., Matron in Charge. Med. Supt., Dr G. A. S. Gordon. Access—Hounslow, ¾; Dist. R., ¼ ml.

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Weir Hall, Edmonton. Access—Silver Street (G.E.), 1 mile. Palmers Green (G.N.), 1½ miles. *See also p. 734*

Southport.—*Bichloride of Gold Hydro*, The Ranche, Birkdale Park. Med. Supt., S. B. Fenn, L.R.C.S.

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HYDROPATHIC ESTABLISHMENTS.

We wish to make this list complete, but it is impossible when some Proprietors do not return our letter of enquiry, which is ***stamped for reply.*** This will account for some omissions in the present edition.

Aberdeen. — *Deeside Hydropathic*, Murtle, near Aberdeen. Res. Med. Supt., Alex. Stewart, M.D., LL.D., F.S.Sc. Access—Rail to Aberdeen thence to Murtle station on the Deeside line, 5 miles from Aberdeen; from this station, 8 minutes.
See also p. 746

Baslow.—*Grand Hotel and Hydro.* Access—Bakewell station, 4 miles by 'bus.

Bath.—*Lansdown Hospital and Nursing Home*, Bath (invalids only; special arrangements for patients suffering from gout, rheumatism, and physical infirmities). Med. Supt., Dr. Percy Wilde. Access—M.R. or G.W.R. station, Bath, about 1 mile.
See also p. 710

Ben Rhydding. — *Ben Rhydding Hydro.* Phys., Thos. Scott, M.D. and Dr. W. R. Bates. Access—Station, a few hundred yards.

Bexhill.—*Wilton Court Hydropathic*, De Vere House. Man., Miss Geake.

Bishops-Teignton (nr. Teignmouth). —*The South Devon Health Resort.* Prop., C. A. Carpenter. Med. Supt., Arthur E. Hayward, M.R.C.S. Access—Teignmouth, 2½ miles.
See also p. 718

Blackpool.—*Matlock Hydro & Boarding House*, Station Road. Access—3 minutes' walk from South Shore station.

Bournemouth (Hampshire).—*Bournemouth Hydropathic.* Res. Prop., W. J. Smyth, M.D. Access—East station, 1½ mile; West station, ¼ mile.
See also p. 744

Bridge of Allan.—*Bridge of Allan Hydropathic Co.* Manager, H. B. Higgins. Access—Station, ½ mile.

Bristol. — *The Bristol Hydropathic* (formerly Bartholomew's Turkish Baths), College Green. Res. Phys., W. J. Spoor, M.B., M.R.C.S.

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Clifton (near Bristol).—*Clifton Grand Spa and Hydropathic.* Access—Clifton Down station, 1 mile; Bristol station, 1½ miles.
See also p. 745

Cork.—*St. Ann's Hill Hydropathic.* Res. Phys., Dr. A. G. Bennett. Access—Blarney station, 2½ miles; Muskerry Light Railway from Cork, station on grounds.

Crieff.—*Strathearn House* (17 miles from Perth). Res. Med. Supts., Thos. H. Meikle, M.D., J.P., and T. Gordon Meikle, M.B., C.M. Access—Crieff station, 1 mile.

Dunblane.—*Philp's Dunblane Hydropathic*, Perthshire. Res. Phys., Dr. Percival. Access—Dunblane station, ¾ mile.
See also p. 743

Eastbourne. — *Eastbourne Hydropathic.* Man., O. F. Bergann.

Edinburgh.—*Hydropathic*, Slateford. J. Bell Man. Dir. Access—Merchiston, 1 mile; Waverley, 3 miles.

Forres.—*Cluny Hill Hydropathic.* Vis. Phys., Dr. John Adam. Access—Forres station, 1 mile; Inverness, 24 miles.

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See also p. 741

Wyche-side Hydropathic. Res. Phys., Dr. Grindrod. Access—Malvern Wells station, G.W.R., ½ mile; Great Malvern station, 2 miles.

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See also p. 747

Royal Hotel and Baths, Matlock Bath. Phys., W. C. Sharpe, M.D. Man., E. Thoma-Badrutt. Access—Matlock Bath station.

See also p. 746

Smedley's Hydropathic, Matlock. Res. and Vis. Physicians. Access—Matlock station, ½ mile; omnibus.

See also p. 740

Melrose. — *Waverley Hydropathic.* Con. Phys., Drs. Calvert and Wade. Access—Melrose station, 1 mile.

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See also p. 743

Scarborough.—*Hydro.* Prop., T. W. Venns. Access — Scarborough. N.E.R., ¼ hour.

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Southport (Birkdale Park).—*Smedley Hydropathic.* Phys., J. G. G. Corkhill, M.D. Southport or Birkdale stations. *See also p.* 744

Kenworthy's Limes Hydropathic, 51, Bath Street, Phys., Drs. A. B. Kenworthy and R. H. Wilshaw. Access—Chapel Street (L. & Y.), Lord Street (Cheshire Line) ¼ mile.

Sunnyside Hydropathic Compy. Man., J. Marshall. Access—Southport stations, ½ mile.

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Ulverston and Barrow-in-Furness. —*Conishead Priory Hydropathic.* Med. Supt., Dr. Ashburner. Access Ulverston station.

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Bournemouth.—*Victoria Nurses' Institute and Home Hospital,* Cambridge Road. Matron, C. Forrest. Access—Bournemouth West stat. *See also pp.* 706 *and* 708

Bristol. — *Royal Infirmary Private Nursing Inst.* Matron, Miss A. B. Baillie. *See also p.* 701

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Monk, W. & Co., Bath Chair Factory, Bath
Montague, J. H., 101, New Bond Street, W.
Mottershead & Co., 7, Exchange St., Manchester
O'Connor Extension Co., 2 Bloomsbury Street, W.C.
Reynolds & Branson, Lim., 13, Briggate, Leeds
Rogers, F. A., 327, Oxford Street, W.

Salmon, Ody & Co., 157, Strand, W.C.
Schramm, K. R., 116, Albany Street, N.W.
Statham, H. & Co., Corporation St., Manchester
Stevens, J. C., 21 & 23, Marylebone Lane, W.
Sumner, R. & Co., Lim., Lord Street, Liverpool
Ward, John, 246 & 247, Tottenham Court Road
Weiss, J. & Son, Lim , 287, Oxford Street, W.
White's Moc-main Patent Lever Truss Co., Lim., 98, Shaftesbury Avenue, W.
Young, Archibald & Son, 57-61, Forrest Road, Edinburgh

Thermometer Manufacturers.

Zeal, G. H. 82, Turnmill Street, E.C.

Vaccine Lymph.

Lymph is supplied, free of charge, on application to National Vaccine Establishment, St. Stephen's House, Cannon Row, Westminster, S.W.
Association for the Supply of pure Vaccine Lymph, 14a, Great Marlborough Street, W.
Birmingham Calf Lymph Establishment, 204, Victoria Road, Aston
Fannin & Co., Lim., Dublin
Faulkner's Vaccine Institution, 16, Endell St., Bloomsbury, W.C.
Ferris & Co., Lim., Bristol
Hime, Dr., Bradford, Yorks.
Jenner Institute for Calf Lymph, 73, Church Road, S.W.
Renner's (Dr.) Establishment, 75, Upper Gloucester Place, N.W.
Roberts & Co. (Dr. Chaumier's), 76, New Bond Street, W.

NOTE BOOK.

It is easier to make a note of a thing than to remember *where* the note was made. The following pages are indexed under their respective headings, and any note can be immediately found when required.

NOTES.

Copy here any formula or fact you wish to keep for reference. (These pages are indexed under the word "Notes.")

ANTIPHLOGISTINE.

THE DENVER CHEMICAL MNFNG. CO.,

110, CHEAPSIDE, LONDON, E.C.

See page xxxi. SOLD BY ALL WHOLESALE CHEMISTS.

NOTES.

GAUTIER FRÈRES' *ESTABLISHED* 1755.
FINE LIQUEUR BRANDY.
(20 *YEARS OLD.*) *See Advertisement, page lix.*

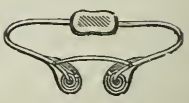
NOTES.

COLES' SPIRAL SPRING TRUSS.

WILLIAM COLES & CO.,

5, Sackville Street, Piccadilly, LONDON, W.

(LATE 225, PICCADILLY, W.) *Particulars by post.*



ADDRESSES (PRIVATE).

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WILLIAM COLES & CO.,

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Note whether Midwifery or Sick Nurses, their terms and private addresses.

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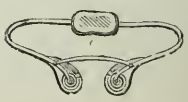

INSTRUMENTS, APPLIANCES OR MATERIALS WANTED.

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WILLIAM COLES & CO.,
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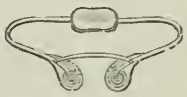
(LATE 225, PICCADILLY W.) *Particulars by post.*



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among Food Beverages comes

CADBURY'S

COCOA

because of its
ABSOLUTE PURITY.

The LANCET describes CADBURY'S as an "excellent article of food' and "the standard of highest purity at present at ainable in regard to Cocoa."

The Medical and Surgical Review of Reviews says of CADBURY S COCOA :—"We have had it under observation for many years and can confirm the manufacturer's statement that it is perfectly pure."

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(ESTABLISHED AT YORK, 1824.)

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PERSONAL ACCIDENT—BURGLARY.

Chairman—RT. HON. LORD WENLOCK, K.C.B., G.C.S.I., G.C.I.E.

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London Office - 2, Bank Buildings, Princes Street, E.C.
West End Branch - 49, PALL MALL, S.W.

SPECIMEN RATES.—Annual Premium to insure the sum of £100.

Age next Birthday.	Premium Payable for the whole of Life.		Limited Payments.				Age next Birthday.
			Table V. With Profits.		Table VI. Without Profits.		
	Table I. With Profits.	Table II. Without Profits.	20 Payments only	25 Payments only	20 Payments only	25 Payments only	
25	£2 3 10	£2 16 1	£3 3 3	£2 15 11	£2 12 1	£2 6 0	25
30	2 9 1	2 0 9	3 8 8	3 0 10	2 16 10	2 10 5	30

Endowment Insurances payable at a specified age or at previous death.

Age next Birthday.	Table III With Profits.		Table IV. Without Profits.		Table IX. With Deferred Profits.		Age next Birthday.
	Payable at 55.	Payable at 60.	Payable at 55.	Payable at 60.	Payable at 55.	Payable at 60.	
25	£3 5 6	£2 16 8	£2 15 0	£2 7 5	£2 19 9	£2 11 1	25
30	4 0 2	3 7 3	3 8 0	2 16 8	3 14 3	3 1 7	30

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Full particulars and Leaflet on application.

FIRE INSURANCES effected by the Company on the most moderate terms, according to the nature of the risks.

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APPLICATIONS FOR AGENCIES INVITED.

INDEX TO LIFE ASSURANCE OFFICES.

A, *when Established;* B, C, D, *Annual Premiums to Insure £100 on death, with Profits, at the age of* 30, 40, *and* 50; E, *Assurance and Annuity Funds, exclusive of Paid-up Capital.* M, *Mutual Offices;* P, *Proprietary Offices.*

Those marked with an asterisk (*) in the E column have not sent revised figures for 1905.

Title, Etc., of Office.	A	B	C	D	E
					£
Abstainers and General, Life and Accident, Carrs Lane, Birmingham. *Sec.*, R. A. Craig, A.I.A. .. .. P	1883	40/11	55/10	82/3	250,000
Alliance, Fire and Life, Bartholomew Lane, E.C. *Gen. Man.*, Robert Lewis P	1824	48/9	64/5	90/9	7,604,234
Atlas, Fire and Life, 92, Cheapside, E.C. *Act.*, Robert Cross. *Gen. Man.*, Saml. J. Pipkin .. .. .. P	1808	49/3	63/7	88/8	1,817,635
British Equitable Life, Fire, and Accident, 1, 2, 3, Queen Street Place, E.C. *Man.*, J. W. Fairey. *Further particulars see page* 656 .. .. .. P	1854	48/8	64/11	91/9	1,756,127
Britannic Assurance Co., Ltd. (*formerly called* British Workman's & General), Life and Endowments, Broad Street Corner, Birmingham. *Chairman*, F. T. Jefferson, J.P. *Sec.*, S. J. Port F.C.I.S. *Further particulars see page* 658 .. P	1866	46/2	62/1	89/6	1,324,310
Caledonian, Fire and Life, 19, George Street, Edinburgh. *Gen. Man.*, Robert Chapman. London Offices 82, King William Street, E.C., and 14, Waterloo Place, S.W. P	1805	48/9	64/6	88/6	2,239,506
City of Glasgow, Life, 30, Renfield Street, Glasgow. *Gen. Man.*, William S. Nicol. London Office, 12, King William St., E.C. *Lon. Man.*, J. D. Milne .. P	1838	48/9	64/6	89/10	2,765,151
Clergy Mutual, Life, 2 & 3, Sanctuary, Westminster. *Act. & Man.*, F. B. Wyatt. *Sec.*, W. N. Neale. *Further particulars see page* 657 .. .. .. M	1829	46/4	62/2	87/4	*4,164,484
Clerical, Medical and General, Life, 15, St. James' Square, and 1, King William Street, E.C. *Act.*, W. J. H. Whittall P	1824	48/7	66/9	96/3	4,132,218
Colonial Mutual, Life and Annuity, 33, Poultry. *Act. Man.*, W. H. C. Neill M	1873	47/4	63/2	89/9	2,920,210
Commercial Union, Fire, Life and Accident, 24, 25, and 26, Cornhill, E.C. *Act.*, H. C. Thiselton .. .. .. P	1861	49/5	64/2	87/8	2,803,296
Co-operative, Life, Fidelity, and Fire, Long Millgate, Manchester. *Sec.*, James Odgers. *Further particulars on page* 659 P	1867	45/8	61/5	88/4	62,786
Eagle, Life, 79, Pall Mall, S.W. *Gen. Man.* and *Sec.*, Geo. R. Jellicoe .. P	1807	50/8	65/5	91/4	2,332,718
Economic, Life, 6, New Bridge Street, Blackfriars. *Act.* and *Sec.*, G. Todd, M.A., F.I.A. .. .. .. M	1823	44/4	59/6	85/5	4,268,728
Edinburgh Life, Endowments, and Annuities, 22, George Street, Edinburgh. *Man.*, A. Hewat, F.F.A., F.I.A. *Sec.*, T. M. Gardiner. London, 11, King William St., E.C. *Sec.*, J. J. Bisgood .. P	1823	47/11	64/2	90/2	3,865,484
English and Scottish Law, Life, Annuity, Endowment, and Loan, 12, Waterloo Place, S.W. *Gen. Man.*, Albert G. Scott P	1839	49/6	65/2	90/11	2,625,289
Equitable Life Assurance Society, Mansion House Street, E.C. *Act.* and *Sec.*, G. J. Lidstone .. .. .. M	1762	53/5	67/11	90/7	4,914,452
Equity and Law, Life, 18, Lincoln's Inn Fields, W.C. *Act.*, W. P. Phelps, F.I.A., M.A. .. .. .. P	1844	48/10	64/6	90/9	4,000,000

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Title, Etc., of Office.	A	B	C	D	E
					£
Friends' Provident, Life, Annuities, etc., Bradford, Yorkshire. *Sec.*, William H. Gregory. *Act.*, Alfred Moorhouse, F.I.A. M	1832	48/–	64/–	89/7	3,202,726
General, Life, 103, Cannon Street, E.C. *Man.* and *Sec.*, John Robert Freeman. *Further particulars see page* 658 P	1837	49/10	65/4	92/8	1,946,074
Gresham, Life, St. Mildred's House, E.C. *Man.* and *Sec.*, James H. Scott P	1848	49/–	65/8	94/3	8,801,673
Guardian, Fire, Life, Accident, and Burglary, 11, Lombard St., E.C., and 21, Fleet Street. *Sec.*, T. G. C. Browne .. P	1821	48/10	64/6	89/3	3,255,502
Law Life, 187, Fleet Street. *Man.*, E. H. Holt. *Act.*, J. E. Faulks .. P	1823	49/4	64/10	91/–	4,192,873
Law Union and Crown, Life, Fire, Accident and Annuities, 126, Chancery Lane. *Gen. Man.*, A. Mackay .. .. P	1825	48/4	64/–	89/10	4,551,433
Legal and General, Life, 10, Fleet Street, E.C. *Act.* and *Man.*, E. Colquhoun P	1836	50/9	65/11	90/9	4,700,000
Life Association of Scotland, 82, Princes St., Edinburgh. *Man.*, John Turnbull Smith. *Sec.*, J. Sharp. London Office, 5, Lombard Street. *Sec.*, J. C. Wardrop P	1838	50/–	65/4	93/4	5,399,348
Liverpool and London and Globe, Fire, Life, and Annuities, 1, Dale Street, Liverpool. *Gen. Man.* and *Sec.*, John M. Dove. London Office, 1, Cornhill, E.C. .. P	1836	49/3	65/6	91/3	5,528,029
London and Lancashire, Life, 66 and 67, Cornhill, E.C. *Gen. Man.*, W. P. Clirehugh. *Act.*, W. R. Hopkins, F.I.A. *Sec.*, G. W. Mannering .. .. .. P	1862	46/10	62/4	86/10	1,920,926
London Assurance Corporation, Fire, Life, and Marine, 7, Royal Exchange. *Man.* of Life Dept., James Clunes. *Act.*, A. G. Hemming .. .. P	1720	49/6	64/11	91/5	2,219,120
London, Edinburgh and Glasgow, Life, Industrial, and Accidents, Farringdon Street, E.C. *Sec.*, T. V. Cowling. *Gen. Man.*, Thos. Neill .. .. P	1881	48/7	64/9	93/4	650,965
London Life Association, Lim., 81, King William Street, E.C. *Act.* and *Man.*, C. D. Higham, F.I.A. .. M	1806	60/–	79/–	108/–	4,756,495
Marine and General Mutual, Life, and Marine, 14, Leadenhall Street, E.C. *Act.* and *Sec.*, S. Day, F.I.A. .. .. M	1852	48/10	65/11	91/11	1,322,882
Metropolitan Life, 13, Moorgate St., E.C. *Sec.*, Bernard Woods .. M	1835	49/9	66/4	92/–	2,125,920
Mutual Life Assoc. of Australasia, 5, Lothbury, Bank, E.C. *Sec.*, Alfred Gilbert M	1869	48/–	65/–	93/–	1,800,000
National Mutual Life, 39, King Street, Cheapside. *Act.* and *Man.*, Geoffrey Marks, F.I.A. *Sec.*, H. J. Lockwood. *Asst. Act.*, A. Levine, M.A., F.I.A. M	1830	48/4	63/7	89/6	2,656,411
National Provident, 48, Gracechurch Street, E.C. *Act. & Sec.*, Lewis F. Hovil M	1835	50/2	66/3	91/1	6,000,000
New York Life, Trafalgar Buildings, Trafalgar Square, London, W.C. *Gen. Man.*, C. Seton Lindsay. *Directs. Gen. of Agencies*, J. E. Briggs and T. J. Pulling. *Sec.*, Wm. R. Collinson, F.C.I.S. M	1845	48/9	66/–	96/11	80,275,405
North British & Mercantile, Fire, Life, Burglary, & Annuities, 61, Threadneedle St., E.C., and 64, Princes St., Edinburgh. *Life Man.* and *Act.*, London, H. Cockburn. *Sec.*, R. Carmichael. *Further particulars see page* 655 .. .. P	1809	49/10	66/1	91/11	13,472,533
Northern Assurance, 1, Moorgate St., E.C. *Gen. Man.*, H. E. Wilson .. P	1836	49/–	64/8	90/10	4,428,065

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M, *Mutual Offices*; P, *Proprietary Offices.*

Title, Etc., of Office.	A	B	C	D	E
					£
Norwich Union, Life, Norwich. *Gen. Man.* and *Act.*, J. J. W. Deuchar. London Office, 50, Fleet Street, E.C.	1808	45/8	59/6	85/3	5,548,812
Patriotic Life, Fire, Accident, Employers' Liability, Fidelity Guarantee, & Burglary, 9, College Green, Dublin. *Man.*, B. H. O'Reilly. *Act.*, Saml. Hunter. London Office, 69, King William Street, E.C. *Man.*, Charles E. Strong .. P	1824	48/8	64/5	90/4	*253.036
Pearl, Life, London Bridge. City, E.C. *Man.*, P. J. Foley .. .. .. P	1864	49/–	65/–	92/–	2,324 056
Pelican & British Empire, Life, 70, Lombard Street, 57, Charing Cross. *Gen. Man.*, G. H. Ryan, F.I.A. .. .. P	1797	48/11	64/7	90/8	4,935.482
Provident Clerks & General Mutual Life Assurance Association, 27 & 29, Moorgate St., E.C. *Sec.*, John E. Gwyer M	1840	46/4	62/8	92/2	2,360.561
Provident, Life, 50, Regent St. *Sec.*, H. W. Andras .. .. .. P	1806	49/5	64/6	90/2	3,586,061
Prudential (Ordinary), Life, Holborn Bars. *Sec.*, D. W. Stable. *Further particulars see page* 656 .. .. P	1848	49/6	65/11	91/11	30,242,432
Refuge, Life, Oxford St., Manchester. *Joint Mans.*, R. Wm. Green & John W. Proctor. London Office, 29, New Bridge Street P	1864	49/3	65/9	91/9	3,424,148
Rock, Life, Annuity, Capital Redemption, Workmen's Compensation, Accident, Guarantee & Burglary, 15, New Bridge St., E.C. *Act.*, G. S. Crisford, F.I.A. P	1806	42/5	55/11	81/2	2,231,933
Royal Exchange Assurance Fire, Life, Annuities, etc., Royal Exchange and 29, Pall Mall. *Act.*, H. E. Nightingale, F.I.A. P	1720	49/2	64/10	90/1	3,935,925
Royal, Fire, Life, and Annuities, Royal Insurance Buildings, Liverpool. *Man.*, Chas. Alcock. London Offices, Lombard Street. *Sec.*, John H. Croft .. P	1845	49/9	64/1	88/3	8,858,868
Sceptre, Life and Endowments, 40, Finsbury Pavement, E.C. *Sec.*, J. G. Phillips P	1864	48/8	64/8	90/6	1,017,315
Scottish Amicable, Life, St. Vincent Place, Glasgow. *Man.*, W. Hutton. *Sec.*, W. G. Spens .. .. .. M	1826	51/9	66/3	90/1	4,757,573
Scottish Equitable, Life, 28, St. Andrew Square, Edinburgh. *Man. & Act.*, G. M. Low. *Sec.*, J. J. McLauchlan. London Office, 19, King William St., E.C. *Sec.*, F. R. Leftwich .. .. M	1831	50/–	65/5	90/6	5.100,000
Scottish Imperial, Life, 183, West George St., Glasgow. *Jnt Man.*, Thos. Russell. *Jnt. Sec.*, Geo. E. Whitelaw. *Jnt. Act.*, John Govan, F.F.A. London Office, 15, King William Street, E.C. .. P	1865	46/7	63/5	91/7	648.213
Scottish Life, Life, Accident and Annuities, 19, St. Andrew Square, Edinburgh. *Man.*, David Paulin, F.R.S.E. London Office, 13, Clements Lane, E.C. *Sec.*, George Struthers .. .. .. P	1881	49/5	64/6	90/5	909.110
Scottish Metropolitan, Life, 25, St. Andrew Square, Edinburgh. *Man.*, H. E. Marriott London Office, 8, King Street, E.C. *Man.*, C. E. M. Hudson .. .. P	1876	40/8	54/7	79/7	585,943
Scottish Provident, Life & Annuities, 6, St. Andrew Square, Edinburgh. *Man.*, J. G. Watson. *Sec.*, J. Lamb. *Asst. Sec.*, R. T. Boothby. *Act.*, W. G. Walton. London Offices, 17, King William St., E.C., and 17, Pall Mall, S.W. .. .. M	1837	42/4	56/6	83/2	13,500.000
Scottish Temperance, Life & Accident, 105, St. Vincent Street, Glasgow. *Manager*, Adam K. Rodger. London, 96, Queen Street, Cheapside. *Man.*, W. A. Bowie P	1883	48/6	63/9	89/10	982.753

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Title, Etc., of Office.	A	B	C	D	E
Scottish Union & National Fire, Life, Pensions, and Annuities, 35, St. Andrew Sq., Edinburgh. *Gen. Man.*, J. A. Cook. *Sec.*, J. K. Macdonald. London Office, 3, King William Street, E.C. *Sec.*, William G. Glennie .. .. .. P	1824	50/6	65/6	91/–	4,322,888
Scottish Widows' Fund, Life & Survivorship, 9, St. Andrew Square, Edinburgh. *Man. & Act.*, N. B. Gunn. *Sec.*, J. G. C. Cheyne. London Office, 28, Cornhill, E.C. *Sec.*, J. W. Miller .. .. M	1815	51/9	66/3	90/7	17,250,000
Standard Life, 3, George Street, Edinburgh. *Man.*, Leonard W. Dickson. London Offices, 83, King William St., and 3, Pall Mall East. *Sec.*, J. H. W. Rolland P	1825	48/11	64/5	89/–	10,925,280
Star, Life, Annuities, Endowments, 32, Moorgate St., City. *Act. & Sec.*, H. G. Hobson P	1843	48/9	64/11	90/6	5,807,214
Sun, Life, 63, Threadneedle Street, E.C. *Act.*, R. G. Salmon, F.I.A. *Sec. & Gen. Man.*, E. Linnell .. .. P	1810	49/2	66/6	94/2	5,560,000
Union, Fire and Life, Cornhill, Charing Cross, and Baker Street. *Gen. Man. & Sec.*, J. Powell. *Act.*, L. K. Pagden .. P	1714	48/9	64/6	90/10	3,327,761
United Kingdom Temp., etc., Life, 1, Adelaide Place, London Bridge. *Sec.*, Johnson Brooks .. .. .. M	1840	48/10	64/11	90/6	8,179,000
University, Life, 25, Pall Mall, S.W. *Act.* and *Sec.*, R. Todhunter, M.A. P	1825	49/11	65/4	91/5	966,018
Victoria Mutual, Life and Endowment, Memorial Hall Buildings, Farringdon St., E.C. *Sec.*, Arthur J. Cook, A.I.A. M	1860	49/3	65/7	93/–	145,185
Wesleyan & General, Life, Annuities, Sickness, Steelhouse Lane, Birmingham. *Gen. Man.*, R. A. Hunt, F.S.S., A.I.A. London Office, 101, Finsbury Pavement, E.C. *Further particulars see page 659* M	1841	48/9	66/6	96/3	801,544
Westminster and General, Life, 28, King Street, Covent Garden, W.C. *Act.*, Ernest Woods, F.I.A. .. .. P	1836	48/10	65/–	90/6	*682,601
Yorkshire, Fire & Life, St. Helen's Square, York. London Office, 2, Bank Buildings, Princes Street. *Further particulars as to a new Endowment Scheme, combining a large amount of assurance with a low premium, see page 650* .. .. P	1824	49/1	64/9	91/7	978,511

Medical Sickness and Accident, 33, Chancery Lane, W.C. *Sec.*, F. Addiscott, F.I.A., secure to registered members of the Medical Profession, and Licentiates of Dental Surgery in United Kingdom, a weekly allowance during incapacity from sickness or accident. Mutual. Established 1884. Assurance and Annuity Funds £200,000.

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H. A. HARBEN, ESQ.
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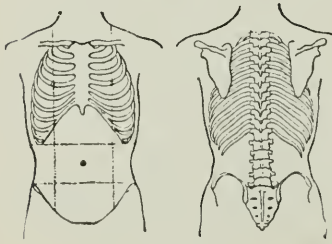

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Anatomy & Pathology of the teeth—Mr. Dolamore, Mr. Farmer
Practical Anatomy—Mr. Arthur Keith, Mr. Lett, Mr. Patterson
Practical Physiology—Dr. Leonard Hill, Dr. Grünbaum, Mr. Greenwood
Food and Dietetics—Dr. Hutchinson
Practical Chemistry—Mr. Page, Mr. Candy
Operative Surgery—Mr. Dean
Morbid Anatomy—Dr. F. J. Smith, Dr. Hadley, Dr. Dawson, Dr. L. Smith
Pathological Histology—Dr. Bulloch
Anæsthetics—Dr. Probyn-Williams
Medical Tutor—Dr. Wall
Surgical Tutor—Mr. Sherren
Obstetric Tutor—Dr. Andrews
Emeritus Professors of Surgery—Mr. Jonathan Hutchinson, F.R.S., Sir Frederick Treves, Bart., K.C.V.O., C.B.
Emeritus Professor of Anæsthetics—Dr. Hewitt
Pathological Institute Director—Dr. Salaman

SCHOLARSHIPS AND PRIZES.—*Entrance Scholarships;* Price Scholarships, value £120 in science and £60 in Anatomy and Physiology (the latter for Students of Oxford or Cambridge only); Epsom Scholarships, £120; two Science Scholarships, value £60 and £35; and two Buxton Arts Scholarships value £30 and £20. The Lethelby Prize value £30 for proficiency in Chemistry. A Scholarship in Human Anatomy and Biology value £20. A Scholarship in Anatomy and Physiology, value £25. A Hospital Scholarship in Clinical Medicine, value £20. A Hospital Scholarship in Clinical Surgery, value £20. A Hospital Scholarship in Clinical Obstetrics, value £20. The Sutton Prize in Pathology, worth £20. The Duckworth Nelson Prize in Practical Medicine and Surgery, value £10. The Sir Andrew Clark Prize, value £26, in Clinical Medicine and Pathology, The Hutchinson Prize, value £40, triennially, for the best Essay upon a Subject in Clinical Surgery, to be duly announced. The Anderson Prizes, £9. Prizes to the value of £60 to Dressers of Out-Patients. Practical Anatomy Prizes, value £6 and £4.

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The London Hospital is in direct communication by rail and tram with all parts of the Metropolis. The Metropolitan, District, East London, and South-Eastern Railways have Stations within a minute's walk of the Hospital and College. The Central Railway (fare 2d. from any station) has a terminal station at the Bank, from whence omnibuses run every few minutes to the Hospital (special fare, 1d.).

For further information apply, personally or by letter, to MUNRO SCOTT, *Warden.*

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A SCHOOL OF THE UNIVERSITY OF LONDON.

THE Hospital contains 342 beds, of which number 141 are devoted to the reception of Surgical, 143 to that of Medical, 45 Cancer, and 13 Special Cases. There are Special Wards for Children and for cases of Uterine Disease.

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All communications to be addressed to Mr. J. MURRAY, Dean of the Medical School, Middlesex Hospital, London, W.

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Gynæcologist—Dr. J. K. KELLY. *Diseases of the Ear*—Dr. KERR LOVE.
Surgeon for Diseases of Throat and Nose—Dr. JOHN MACINTYRE.
Assistant Physicians—Dr. SCOTT, Dr. HUNTER, Dr. ANDERSON, Dr. FINDLAY, Dr. MCCRORIE, Dr. MCLAREN.
Extra Assistant Physicians—Dr. MACNAIR, Dr. HENDERSON, Dr. C. S. MARSHALL.
Assistant Surgeons—Mr. DEWAR, Mr. RUTHERFURD, Mr. M'GREGOR, Mr. LUKE, Mr. PATERSON, Mr. PATRICK.
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Bursaries.—The David Foulis Scholarship and the John Reid Prize, value £25 each, are open to Students of the Royal Infirmary.

Fees, which include Hospital Practice and the Clinical Lectures—For one year, £10 10s.; six months, £6 6s.; three months, £4 4s. The total fee is £21. Vaccination, £1 1s. Pathology, £4 4s. Bacteriology, £2 2s.

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Assistant Surgeon—Dr. ROWAN.
Junior Assistant Surgeon—Dr. H. W. THOMSON.
Junior Assistant Surgeon and Electrician—Dr. GILCHRIST.
Pathologist—Dr. H. WALKER.
Bacteriologist—Dr. MCLURE.

For further information apply to J. MAXTONE THOM, M.B., Superintendent.

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Medicine—John Wyllie, M.D., LL.D.
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Clinical Surgery—Thomas Annandale, M.D.
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Diseases of the Eye—George Mackay, M.D.
Clinical Instruction on Diseases of Children—T. M. Burn Murdoch, M.D., and Staff of Royal Hospital for Sick Children.
Embryology and Vertebrate Zoology—J. Beard, D.Sc.
Anatomy—D. Waterston, M.D.
Applied Anatomy—Harold J. Stiles, M.B., C.M.
Histology—P. T. Herring, M.D.
Physiological Chemistry—Vacant.
Experimental Physiology—Sutherland Simpson, M.D., D.Sc.
Experimental Pharmacology—W. C. Sillar, M.B., B.Sc.
Pathological Bacteriology — James Martin Beattie, M.D., C.M.
Physics—C. G. Knott, M.A., D.Sc.
Diseases of the Larynx, Ear, and Nose—R. M'Kenzie Johnston, M.D., C.M.
Tropical Diseases—A. Davidson, M.D.
Diseases of the Skin—W. Allan Jamieson, M.D.
Clinical Instruction in Infectious Fevers—J. O. Affleck, M.D., and Claude B. Ker, M.D.
Practical Anæsthetics—T. D. Luke, M.B.

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By Authority of the Senatus,

July, 1905. L. J. GRANT, *Secretary of Senatus.*

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Students can complete, at the University of Durham College of Medicine, Newcastle-upon-Tyne, the entire course of professional study required for the above degrees and for the Diploma in Public Health; also for the examinations of the Royal Colleges of Physicians and Surgeons, and for the Army and Navy Examination Boards.

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All information, together with Examination Papers, &c., is given in the Calendar of the University of Durham College of Medicine, Newcastle-upon-Tyne, which may be obtained from the Secretary at the College.

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(*c*) Single courses of Lecture, 5 guineas.

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Further particulars may be obtained from the Sec., PROF. HOWDEN, at the College.

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FACULTY OF MEDICINE.

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A complete Dental Curriculum is also provided.

It is now arranged that Students of the College shall be admitted to the clinical practice of the Bristol Royal Infirmary and the Bristol General Hospital conjointly, and consequently both these Institutions are open to all Students.

The Infirmary and the Hospital comprise between them a total of 470 beds; and both have very extensive Out-patient Departments, Special Departments for the Diseases of Women and Children, and of the Eye, Ear, and Throat, besides large Out-door Maternity Departments, and Dental Departments.

Students of the College also have the the privilege of attending the practice of the Bristol Royal Hospital for Sick Children and Women, containing 104 beds, and that of the Bristol Eye Hospital, with 40 beds. The total number of beds available for Clinical Instruction is therefore 614.

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Joseph O'Carroll, M.D., Examiner in Medicine, Royal University
J. B. Coleman, C.M.G., M.D., Examiner in Medicine, Conjoint Board
R. Travers Smith, M.D., Examiner, Conjoint Board

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Sir Thornley Stoker, Ex-President R.C.S.; late Fellow and Examiner in Surgery, Royal University; Surgeon to Swift's Hospital for Lunatics
Sir Thomas Myles, M.D., F.R.C.S., late President Royal College of Surgeons

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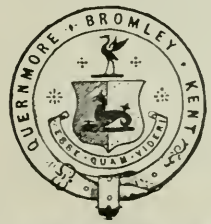

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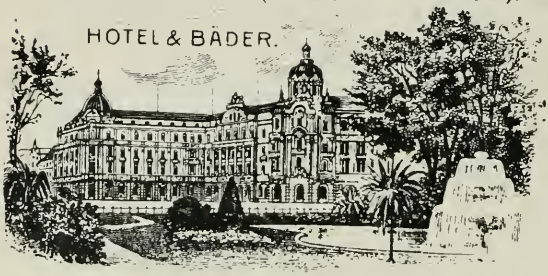

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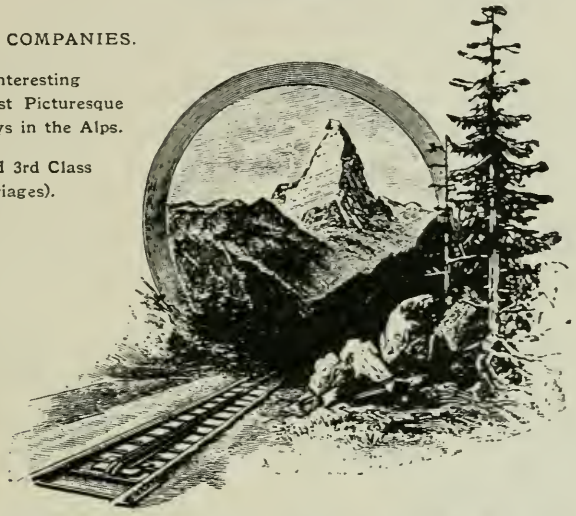

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The Steamers connect at Valparaiso with the Company's Coasting Steamers for Callao, Panama, and intermediate Ports.

SPECIAL TERMS FOR TOURISTS AND FAMILIES.

Unsurpassed Accommodation for Passengers. Electric Light throughout.

FREE TABLE WINE. SURGEON AND STEWARDESS CARRIED.

Full particulars, Pamphlet of Tours, Outward and Homeward, Itineraries, &c., on application to—

The Pacific Steam Navigation Co.,

ST. MARGARET'S CHAMBERS, PICCADILLY, MANCHESTER;
or PACIFIC BUILDINGS, 31-33, JAMES STREET, LIVERPOOL.

Mendip Hills Sanatorium,

HILL GROVE, WELLS, SOMERSET.

OPEN-AIR TREATMENT OF CONSUMPTION.

SPECIALLY built on Chalet system. Extent of Sanatorium grounds **300** acres—meadow and woodland; sheltered pine avenues; altitude **850** feet; hot-water radiators and electric light. Patients occupy separate rooms or separate chalets.

Formaldehyde and Static Electric Treatment.
Cyllin Inhalation.

Resident Physician: DR. C. MUTHU. *Apply*, SECRETARY.

TERMS: **From Two-and-a-Half Guineas** PER WEEK.

Open-Air Treatment of Consumption.

THE HOME SANATORIUM,

(HOME OR HUT SYSTEM),

SOUTHBOURNE ROAD, BOURNEMOUTH.

150 feet above Sea Level. **10** acres well timbered Pleasure Grounds. Full Nursing Staff under Trained Matron. Inclusive charges from **£5 5s.** weekly. A few rooms at **£4 4s.**

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For Illustrated Prospectus apply to the Resident Superintendent.

Crooksbury Sanatorium,

FARNHAM, SURREY.

SPECIALLY built for the Open-Air Treatment, on a sheltered Southerly slope, amidst Pine Trees and Heather. Invigorating Hill Climate, with much Sunshine. SEPARATE BUILDING FOR CONVALESCENTS AND SLIGHTER CASES, and a few Chalets. Trained Nurses. Electric Lighting. Lovely views over Hindhead, etc., etc. Special arrangements for the Opsonic Test.

Resident Physician:

Dr. F. RUFENACHT WALTERS,

Late Physician to the Mount Vernon Chest Hospital.

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FOR LADIES.

Situated on the Chiltern Hills, in well-wooded breezy upland country surrounded by beautiful open commons.

For the treatment of neurasthenia, anæmia, debility following operations and incipient lung trouble; on Open-Air principles. Delicate children can also be received.

Physicians: DR. ESTHER COLEBROOK CARLING assisted by DR. MONICA ROBERTSON.

Terms: 2½ to 4 guineas weekly.

For Prospectus apply to SECRETARY, KINGWOOD, PEPPARD COMMON, OXON.

Also under the same management, **MAITLAND COTTAGE SANATORIUM,** for men and women of the working class suffering from early phthisis.

Terms: 30s. weekly. *Apply to* SECRETARY.

ROSTREVOR SANATORIUM

Nr. Warrenpoint, CO. DOWN.

WAS especially built in 1899 by the Resident Physician, Dr. HOWARD SINCLAIR (Visiting Physician to the Forster Green Hospital for Consumption).

On gravel soil. The site while well sheltered from colder winds is open to the South. High above Sea-level. It is three miles distant from Rostrevor village, and far from dusty roads.

Hill climbs within Sanatorium grounds.

Trained Nurses, X Rays, and other Modern Accessories.

Terms: 2½ to 3½ guineas. *Prospectus on Application*

ELLERSLIE, CRIEFF,

PERTHSHIRE.

Dr. THOMPSON CAMPBELL, late Medical Officer, Consumption Sanatoria, Bridge of Weir, and Medical Superintendent, Ochil Hills Sanatorium, receives a limited number of PATIENTS suffering from Pulmonary Tuberculosis for Sanatorium Treatment.

Terms £3 3s, to £3 10s. per week.

Perfect Rest and Quietude

Can be obtained for Patients AFTER ILLNESS or OPERATION, in a large well-built House in ***RYDE, FACING THE SOLENT,*** and having also a South Front.

The Garden opens on the sea wall near the Canoe Lake.

The climate is dry, sunny, and bracing. Medical supervision if necessary.

TERMS FROM **£2 2s.** PER WEEK, according to requirements.

Address : ***RAYS, STRAND, RYDE.***

No Mental, Infectious, or Phthisical Patients received.

THE SOUTH DEVON HEALTH AND HOLIDAY RESORT.

One of the Loveliest Spots in the Country.

CLIMATE PROBABLY UNSURPASSED IN ENGLAND.

FIRST-CLASS TURKISH & OTHER BATHS.

FOR TERMS APPLY TO—

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"*How to Live* 100 *Years, Keeping Strong and Hearty*," *post free* 1*s.* 2*d.*

Telegrams: "DICKSON, BUXTON." *National Telephone:* 130, BUXTON.

WYE HOUSE ASYLUM, BUXTON, DERBYSHIRE.

ESTABLISHED IN 1858, FOR THE

Care and Treatment of the INSANE of the Higher and Middle Classes.

THE NEW INSTITUTION COMPLETED 1901.

Resident Physicians { F. K. DICKSON, J.P., F.R.C.P. & F.R.C.S.Edin.; *and* T. G. DICKSON, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg.

Chaplain: REV. C. C. NATION, M.A. (Vicar of Buxton and Rural Dean).

THIS Institution has been established for the **Reception of Patients of Both Sexes of the Higher and Middle Classes**, for whom it is admirably adapted by its position and appointments. It is erected on an eminence surrounded with scenery of the most varied character, and the views from the House and Terraces extend over many miles of picturesque country. There is also in connection a Summer Residence on the coast of North Wales. The House is furnished throughout on the most liberal scale, and fitted up and arranged as a Gentleman's Family Residence.

The Sanitary arrangements and Ventilation are modern in design and *perfect* in construction, and are certified to be so by the Sanitary Authority.

The Proprietor lives in the House, and is assisted in his duties by a Resident Assistant Physician, and an experienced Lady Superintendent.

Every exertion is made to promote health and comfort, both by moderate bodily employment and by variety in amusements, such as reading, music, drawing, excursions, golf, billiards, croquet, lawn tennis, theatricals, re-unions, etc. A library is provided, containing some 2,000 works of varied character, suited to the condition of the patients; also periodicals, magazines, and newspapers.

Due provision is made for the spiritual welfare and consolation of the Patients, and Divine Service is held every Sunday in the Institution.

The Pleasure Grounds, which are very spacious, have been laid out in the most tasteful manner especially for the recreation of the Patients; and contain conservatories, lawns for croquet and tennis, a private golf course, and other out-door games: also a theatre, billiard room, and workshop for the in-door occupation of Patients. The House is heated throughout by means of hot-water apparatus and open fireplaces.

Buxton is directly accessible by the Midland and the L. & N.W. Railways. It is situated on the mountain limestone formation, 1,000 feet above sea level. Being a watering-place, it affords exceptional advantages and varied recreations to convalescent Patients.

Particulars of Terms and Forms of Admission on application to THE RESIDENT PHYSICIANS.

MIDDLETON HALL,

MIDDLETON ST. GEORGE, Co. DURHAM.

PRIVATE ASYLUM FOR THE CARE AND TREATMENT OF LADIES AND GENTLEMEN.

THE HOUSE, which stands amid well-wooded grounds, in a healthy and pleasant country in the valley of the Tees, has been recently erected from plans approved by the Commissioners in Lunacy, and embodies all the latest improvements in the construction of Homes for the Nervous and Mentally Afflicted. The building is **fire-proof,** and lighted throughout by electricity, and the heating is aided by a system of steam pipes.

Private sitting rooms and special attendants are provided if required.

Voluntary Boarders, not under certificates, can be received.

Terms to be had on application to—

L. HARRIS-LISTON, M.D., Medical Superintendent.

THE PLEASAUNCE,

YORK.

A Private Home for Ladies only of the upper and middle classes.

Ladies can be received either as voluntary patients or certified under the Lunacy Act, 1890.

Apply to Dr. SWANSON, Resident Medical Proprietor.

East Sussex County Asylum,

HELLINGLY MENTAL HOSPITAL,

PRIVATE PATIENTS are received at a uniform charge of **£1 4s. 6d.** per week for each person, to include all things necessary except clothing.

The main and detached building of this new Institution have been built on the most modern principles, and everything possible has been done to ensure the comfort and cure of those mentally afflicted.

The estate comprises 400 acres, and is situated on high ground nine miles north of Eastbourne and four miles west of Pevensey Bay.

There is a separate detached block for children.

For particulars apply to the MEDICAL SUPERINTENDENT.

BOREATTON PARK

THIS PRIVATE ASYLUM, which was founded by the late W. H. O. SANKEY, M.D., F.R.C.P., for the reception of a limited number of ladies and gentlemen mentally afflicted, is now conducted on the same lines by his son, E. H. O. SANKEY, M.A., M.B., B.C., Cantab.

Dr. BURD, Newport House, Shrewsbury, M.D. and M.C. Cantab., Consulting Physician to the Salop Infirmary, and to the Salop and Montgomery Lunatic Asylum, etc., is Consulting Physician.

The Ladies' Division is directly supervised by Mrs. SANKEY.

The Mansion stands high, among handsomely laid out gardens in the midst of a picturesque deer park (about 70 head of deer are kept), and commands a magnificent view of Welsh mountain scenery.

Carriages, horses, lawn-tennis, golf, trout and other fishing are provided.

Arrangements can be made to enable friends of patients to reside in the House as Boarders if so desired.

The Asylum is situate about ten miles from Shrewsbury, within easy distance of Baschurch Station, G.W.R., whither carriages can be sent at any time for visitors.

Letters and Telegrams should be addressed to

DR. SANKEY, Boreatton Park, BASCHURCH, SALOP.

COTON HILL

HOSPITAL FOR THE INSANE,

NEAR STAFFORD.

Chairman of the Committee of Management—

THE RIGHT HONOURABLE THE EARL OF DARTMOUTH.

This Hospital, which is beautifully situated in a high and healthy position, with extensive grounds, Cricket Field, Lawn Tennis Courts, Golf Links, etc. is devoted to the Care and Treatment of the Mentally Afflicted of the Upper and Middle Classes.

PRIVATE ROOMS with Special Attendants in the Hospital, or semi-detached Villas in the grounds, can be arranged. Terms on Application.

For further Particulars apply to R. W. HEWSON, *Medical Superintendent.*

DERBY BOROUGH ASYLUM.

FEMALE PRIVATE PATIENTS.

A SEPARATE and DETACHED BLOCK has just been opened. Terms: **One Guinea per week,** which includes everything except clothing. This Building is distinct from the main Asylum, and has separate recreation grounds.

For further particulars, apply to the Medical Superintendent,

Dr. S. R. MACPHAIL, Rowditch, DERBY

FOR THE TREATMENT OF MENTAL DISEASES.

Shaftesbury House,

FORMBY-BY-THE-SEA, near LIVERPOOL.

TELEPHONE—8, FORMBY.

Resident Licensees:

STANLEY A. GILL, B.A., M.D., M.R.C.P.Lond.,

Formerly Medical Superintendent to the Liverpool Lunatic Asylum.

MRS. STANLEY GILL.

Visiting Physician:

T. R. GLYNN, M.D., F.R.C.P.Lond.,

Consulting Physician, Liverpool Infirmary, and Professor of Medicine, University College, Liverpool.

THIS House, specially built and licensed for the care and treatment of a limited number of Ladies and Gentlemen mentally afflicted, is delightfully situated near the coast between Liverpool and Southport, so that patients have the benefit of pure bracing sea air, for which Formby is noted. The House is in the country, and stands in several acres of ornamental well-wooded grounds, the surroundings being in every way bright, cheerful and pleasant. As the Licensees reside on the premises they are able to devote the whole of their time to the constant supervision of the patients. All kinds of out- and in-door amusements and occupation provided. Voluntary boarders without certificates admitted. Terms moderate.

The Licensees have also a private residence at Deganwy, North Wales, for the treatment of mild borderland and convalescent patients.

GROVE HOUSE,

ALL STRETTON, CHURCH STRETTON, SHROPSHIRE,

A PRIVATE HOME for the Cure and Treatment of a limited number of Ladies mentally afflicted.

Climate healthy and bracing.

Apply to MRS. MCLINTOCK (widow of the late DR. MCLINTOCK) the Proprietress, *or to* the Resident Medical Superintendent,

DR. MCLINTOCK.

STRETTON HOUSE,

CHURCH STRETTON, SHROPSHIRE.

A Private Licensed House for the treatment of Gentlemen suffering from any sort of Mental Disease.

ESTABLISHED 1853.

SITUATED amongst charming scenery, 600 ft. above the sea, large grounds, pure water, perfect sanitation, and the bracing air of the "English Highlands."

Accessible from all parts. Good train service on G.W. and L. & N.W.R. Station within one mile.

Plenty of amusements, recreation and occupation are provided. Many kinds of games are played. Horses and carriages are kept for the Patients' use. There is an excellent full-sized billiard table.

The percentage of recoveries is very good, and the general physical health is much improved.

For the Terms, which are moderate, apply to the RESIDENT MEDICAL PROPRIETOR.

Telegrams—Stretton House, Church-Stretton. *Telephone*—P.O. 10, Church-Stretton.

THE RETREAT, YORK.

A HOSPITAL FOR THE

TREATMENT OF MENTAL DISEASES.

ACCOMMODATION FOR **170** PATIENTS.

Terms:—£2 8s. and upwards, according to requirements.

Fully Qualified Mental Nurses also available for Private Cases.

Resident Medical Superintendent: BEDFORD PIERCE, M.D.

THE MOAT HOUSE, TAMWORTH, STAFFORDSHIRE.

STATIONS: L. & N. WEST. and MID. RAILWAYS.

A HOME FOR NERVOUS AND MENTAL CASES.

The House stands in grounds of ten acres (within 5 minutes' drive of either Station), and is devoted to the Care and Treatment of a few Ladies suffering from Nervous and Mental Disorders, who enjoy the comforts, privacy, and occupations of home-life. Voluntary Patients are received without Certificates.

For terms, etc., apply to the Resident Proprietor,

E. HOLLINS, M.A. Camb., J.P.

Fisherton Asylum, Salisbury.

APPLY TO W. C. FINCH.

BETHEL HOSPITAL, NORWICH.

ESTABLISHED A.D. 1713.

THIS Institution is an endowed Hospital, registered under the Lunacy Acts, and managed by a Board of Governors who have no pecuniary interest in its success, but whose sole object is to promote the comfort and well-being of the Patients.

The Hospital is arranged for both sexes, and is especially adapted for those whose means will not permit of their being sent to an expensive and luxurious Institution for the Insane, and who may object to the associations of a pauper asylum.

The terms for admission are **thirty shillings per week or more,** according to Patients' condition and circumstances, which includes everything, except clothing, carriage exercise, or any expenses incurred for amusement beyond the Hospital grounds.

CONSULTING PHYSICIAN:
SAMUEL J. BARTON, Esq., M.D.
(Consulting Physician to the Norfolk and Norwich Hospital).

RESIDENT MEDICAL SUPERINTENDENT:
JAMES FIELDING, M.D., M.R.C.S. Eng., L.R.C.P. Edin.

CLERK TO THE GOVERNORS:
FRANCIS HORNOR, QUEEN STREET, NORWICH.

MATRON:
MISS OXLEY *(Late Sister Guy's Hospital, London).*

APPLICATION FOR ADMISSION TO BE MADE TO THE
Resident Medical Superintendent, BETHEL HOSPITAL, NORWICH.

Bailbrook House, Bath,

For the Care and Treatment of Ladies and Gentlemen Mentally afflicted.

ESTABLISHED 60 YEARS.

Resident Licencees:

DR. LIONEL A. WEATHERLY. | MRS. LIONEL A. WEATHERLY.

Beautiful Mansion standing in 45 acres of well-wooded Park, with lovely views of Bath and surrounding scenery. Fifteen minutes' drive from G.W.R. and Midland Stations, Bath. *Telephone No.* 49.

Horses and Carriages, Billiards, Lawn Tennis, Fishing, Boating, and Golf.

VOLUNTARY BOARDERS RECEIVED.

Suitable LADY PATIENTS can be received into—

LANBRIDGE HOUSE "ANNEXE,"

a charmingly situated old-fashioned house standing in its own grounds. There is also a Home at the Seaside for the Patients during the Summer months.

The Electric Trams pass the Entrance gates of Lanbridge House & Bailbrook House.

Terms Inclusive from 4 to 15 guineas per week, according to circumstances of case and accommodation required.

Dr. WEATHERLY attends at 75, PARK ST., BRISTOL, every Monday from 1 to 4 o'clock.

KINGSDOWN HOUSE,

BOX, WILTS.

Licensed for the Treatment of Diseases of the Brain and Nervous System.

THIS house has been entirely remodelled, and affords good accommodation for the treatment of all forms of Mental and Nervous Disorders.

It is situated 450 feet above sea level, and commands extensive views of the surrounding country.

Box Station (G.W.R.) is fifteen minutes, and Bath Stations (Midland and G.W.R.) are 5½ miles from the house.

Cases of Neurasthenia and Borderland cases can be received and treated, and have separate accommodation.

For terms apply to—

H. C. MacBRYAN, *Resident Proprietor and Medical Superintendent, formerly of the London County Asylum, Hanwell, W.*

N.B.—Mr. MacBryan attends at 40, Gay Street, Bath, on Mondays, Wednesdays, and Fridays. Telephone Number—21Y, Bath.

THE GOVERNORS OF
BETHLEM ROYAL HOSPITAL

ARE PREPARED TO RECEIVE A LIMITED NUMBER OF PATIENTS AT TWO GUINEAS A WEEK, INCLUSIVE.

All particulars may be obtained from the Resident Physician, or the Steward of the Hospital.

ST. GEORGE'S ROAD,
LONDON, S.E.

Telegrams: "ENVOY, LONDON." Telephone: 5608 Central.

St. Luke's Hospital
For Mental Diseases,
OLD STREET, LONDON.

ESTABLISHED 1751.

For the TREATMENT OF MENTAL DISEASES. Admission on payment of 15/- to 30/- per week, or gratuitously.

CONVALESCENT ESTABLISHMENT at ST. LAWRENCE ON SEA, near RAMSGATE. Voluntary Boarders (Ladies) are received at Home.

TRAINED NURSES supplied from the Private Nursing Staff for nursing mental and nervous cases at their own Home.

Enquiries should be addressed to the Secretary at the Hospital.

W. H. BAIRD, *Secretary.*

NORTHWOODS HOUSE,
WINTERBOURNE, near BRISTOL.

A Sanatorium for Ladies and Gentlemen suffering from Nervous and Mental Disorders.

Situated in a large Park, 300 feet above sea level, in a healthy and picturesque locality, easily accessible from London, Bristol, and Cardiff by Winterbourne Station; or from Fishponds, Yate, or Patchway Stations.

Voluntary Boarders received without Certificates.

For further information, see London Medical Directory, p. 2089, and for Terms, etc., apply to Dr. EAGER or Mr. W. EAGER, Resident Medical Proprietors, Northwoods House.

Dr. EAGER or Mr. W. EAGER *attends at* 64, *PARK STREET, BRISTOL, on Mondays and Thursdays, from* 12 *to* 3 *o'clock.*

SPRINGFIELD HOUSE,

NEAR BEDFORD,

(TELEPHONE No. 17. **Within an hour of London by Midland.**)

An Institution for the

CARE AND CURE OF THE INSANE.

Under the Personal Direction of the Licensees

DAVID BOWER, M.D., &C.,

Late Resident Medical Superintendent of Saughton Hall Asylum, Edinburgh; and

MR. W. S. BOWER AND MISS BELLARS,

(ASSISTED BY LADIES' AND GENTLEMEN'S COMPANIONS.)

DR. BOWER attends at 5, Duchess Street, Portland Place, W., on Tuesdays, from 4 to 5.

Ordinary Terms—Three Guineas per week.

Vacancies are advertised each week in the *British Medical Journal* and the *Lancet.*

THE SILVER BIRCHES.

Church Street, Epsom.

This Home has been established over forty years for the Care and Treatment of Ladies suffering from Mental Ailments.

Terms, &c., on application to Dr. DANIEL, who resides in the house.

OTTO HOUSE,

47, North End Road, West Kensington, W.

Telephone No.: 1004 Hammersmith.

A HOME FOR THE CARE AND TREATMENT OF LADIES MENTALLY AFFLICTED.

Apply to Mrs. CHAPMAN (Resident Lady Superintendent), or to A. H. SUTHERLAND, Esq. (Licensed Propr.), 2a Marloes Rd., Kensington, W.

NEWLANDS HOUSE,

Telephone No.: 524 Streatham.

Tooting Bec Road, Tooting, S.W.

A HOME FOR THE CARE AND TREATMENT OF GENTLEMEN MENTALLY AFFLICTED.

Apply to H. J. HIND, Esq., M.R.C.S. (Res. Medical Superintendent), or to A. H. SUTHERLAND, Esq. (Licensed Propr.), 2a Marloes Road, Kensington, W.

EARLSWOOD:

The National Training Home for the Feeble-Minded.

Great efforts are made to educate and train—Physically, Intellectually, Mentally, and Morally—by a skilled staff of teachers and attendants.

RATES OF PAYMENT AND CLASSES OF ACCOMMODATION:

From **65 guineas** per ann. Institution to clothe { Classification according to mental capacity, and association with other patients

To **250** guineas (private patients) separate sitting and bedroom, with special Attendant night and day.

Suite of rooms with two or more Attendants by arrangement.

FREE ADMISSION to the Foundation, by the VOTES OF THE SUBSCRIBERS, as PART-PAYMENT or ORDINARY CANDIDATES, can be secured by eligible cases when approved by the Board of Management.

Forms and Full Particulars from H. HOWARD, *Secretary, at the Offices:*

36, KING WILLIAM STREET, LONDON BRIDGE, E.C.

WESTERMAINS PRIVATE ASYLUM,

KIRKINTILLOCH,

NEAR GLASGOW.

FOR LADIES.

Terms:—EIGHTY GUINEAS AND UPWARDS.

Apply—Mr. LAWRIE, Resident Proprietor.

QUIET CASES ONLY RECEIVED.

HOLLOWAY SANATORIUM,

VIRGINIA WATER.

A Registered Hospital for the CURE and CARE of the INSANE and of NERVOUS INVALIDS of the MIDDLE and UPPER CLASSES.

THIS Institution is situated in a beautiful and healthy locality, within easy reach of London. It is fitted with every comfort. Patients can have Private Rooms and Special Attendants, as well as the use of General Sitting Rooms, at moderate rates of payment. Voluntary Boarders not under Certificates can be admitted. There is a branch establishment at Brighton, where Patients and Boarders can be sent for a change, and provided with all the comforts of a well-appointed home.

For Terms, apply to the RESIDENT MEDICAL SUPERINTENDENT,

St. Ann's Heath, Virginia Water, SURREY.

BARNWOOD HOUSE,
GLOUCESTER.

A REGISTERED HOSPITAL for PRIVATE PATIENTS Only, of the UPPER and MIDDLE CLASSES.

Arranged and furnished with all the most approved appliances for the treatment, comfort, and amusement of the Inmates. Within two miles of the Railway Station, and easily accessible by Rail from London and all parts of the kingdom. It is beautifully situated at the foot of the Cotswold Hills, and stands in its own grounds of 250 acres. *For terms, etc., apply to—*

JAS. GREIG SOUTAR, M.B., C.M., *Resident Superintendent.*

PLYMPTON HOUSE,
PLYMPTON, SOUTH DEVON.

Drs. ALDRIDGE & TURNER, Proprietors. *Established* 1834.

PLYMPTON HOUSE is licensed for the accommodation of both sexes, and is well adapted by its position and appointments for the medical treatment and care of patients of the upper and middle classes, suffering from Mental disease.

The proprietors, Drs. ALDRIDGE & TURNER, have had very large experience of Mental cases, both in public and private institutions, and everything that can be done to ameliorate the condition of the chronic, and promote the cure of the acute cases—placed under their charge—is guaranteed.

Terms on application.

Letters and Telegrams:
MEDICAL SUPERINTENDENT,
PLYMPTON HOUSE, PLYMPTON

TELEPHONE NO. 2 PLYMPTON.

CAMBERWELL HOUSE

Telephone No. 1037 HOP.

PECKHAM ROAD, CAMBERWELL.

(Within 3 miles of London and Westminster Bridges.)

For the Care and Treatment of Ladies and Gentlemen suffering from MENTAL DISORDERS.

CONSISTS of separate Houses, lit by electricity and completely modernised, standing in 20 acres of picturesque grounds, including cricket and football field, tennis courts and croquet lawns. The terrace Houses are quite separate from the rest of the Institution, and provide most comfortable accommodation for suitable cases. Terms from 25 - to 3 guineas a week. The ordinary terms for acute or senile cases are 2 guineas a week. Patients can have separate sitting and bedrooms with a special nurse, as well as the use of the general rooms, and a change to the seaside annexe at Walton-on-the-Naze.

Full particulars can be obtained from the MEDICAL SUPERINTENDENT, 33, Peckham Road, Camberwell, S.E.

FENSTANTON,

Christchurch Road, STREATHAM HILL,

(Removed from PETERBORO' HOUSE, FULHAM.)

A Private Asylum for the Cure and Treatment of Ladies Mentally Afflicted.

A Mansion surrounded by about 12 acres of Garden, etc., and within five minutes' walk of Tulse Hill Station (L.B. & S.C.R.); other Stations, Herne Hill (L.C. & D.R.) and Streatham Hill.

For Terms, apply to - **J. R. HILL, L.R.C.P.**, *Medical Superintendent.*
Son of the late Dr. R. Gardiner Hill.

WONFORD HOUSE (HOSPITAL for the INSANE),

NEAR EXETER.

A REGISTERED HOSPITAL for the UPPER and MIDDLE CLASSES.

This Institution is situated in a beautiful and healthy locality, within a short distance of the City of Exeter. There is comfortable accommodation at moderate rates, both in the Hospital itself and at Plantation House, Dawlish, a seaside residence on the South Devon Coast, affording more privacy, with the benefits of sea-air and a mild and salubrious climate. Private rooms and Special Attendants provided, if required. Voluntary Patients or "Boarders," not under certificates, also received.

FOR TERMS, ETC., APPLY TO—

P. MAURY DEAS, M.B., M.S., Lond., *Resident Medical Superintendent.*

The Lawn, Lincoln.

A REGISTERED HOSPITAL FOR MENTAL DISEASES, situated in the City of Lincoln, near to the Cathedral.

FOR TERMS, APPLY TO

DR. RUSSELL. *Resident Medical Superintendent.*

PECKHAM HOUSE,

PECKHAM, S.E.

Extensive arrangements are made in this Asylum for the reception of PRIVATE PATIENTS of BOTH SEXES.

TERMS FROM **25/-** PER WEEK.

Further particulars can be obtained upon application to the RESIDENT PHYSICIAN.

NORTHUMBERLAND HOUSE,

GREEN LANES, FINSBURY PARK, N.

ESTABLISHED 1814. TELEPHONE, No. 888 North.

An INSTITUTION for the Care and Treatment of the MENTALLY AFFLICTED of the UPPER and MIDDLE CLASSES.

Four miles from Charing Cross; easy of access from all parts; a quarter of an hour's walk from Finsbury Park Station (G.N.R.), from which Trams pass the gates.

Six acres of ground, highly situated, facing Finsbury Park.

Private Villas, in suites of rooms.

TERMS, from **2 Guineas** upwards, according to accommodation provided.

For further particulars apply to RESIDENT PHYSICIAN.

ASHWOOD HOUSE,

KINGSWINFORD, STAFFORDSHIRE.

An old-established and modernized Institution for the Medical Treatment of Ladies and Gentlemen mentally afflicted.

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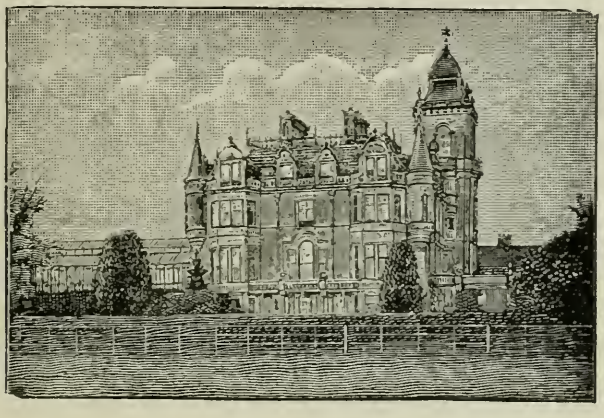

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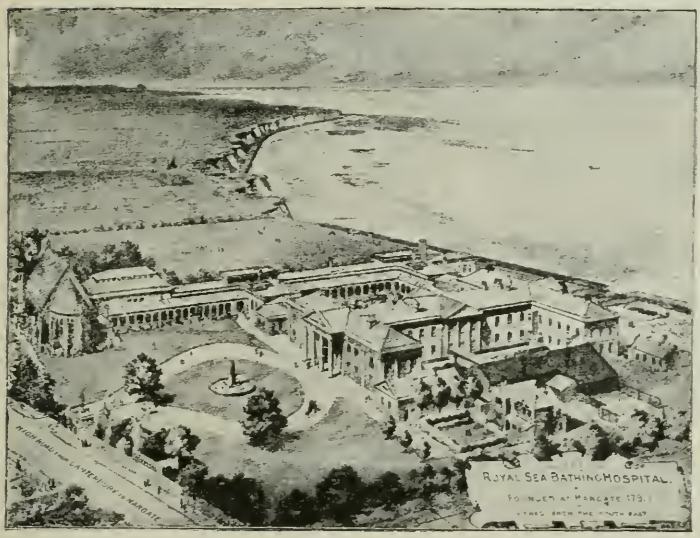

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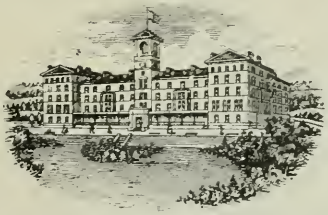

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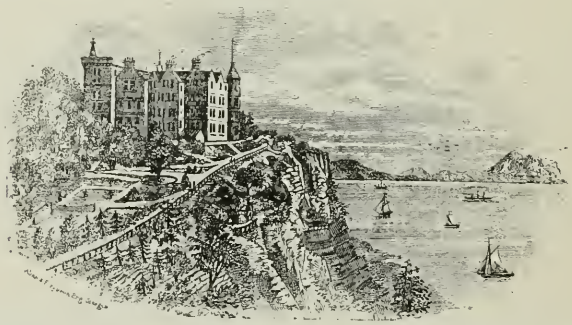

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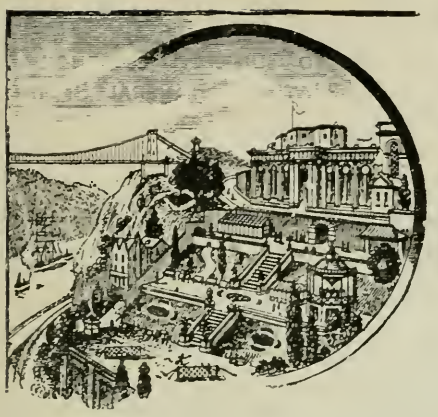

Clifton . Grand . Spa . . and Hydro,

CLIFTON, BRISTOL.

Beautifully situated on the brink of the Avon Gorge, 230 feet above the river, close to the Downs.

Forming part with the establishment is a magnificent Pump Room, where Entertainments are held.

TURKISH AND RUSSIAN BATHS, AIX DOUCHES, NAUHEIM BATHS, MASSAGE, GALVANIC AND FARADIC BATHS.

Local Doctors are free to send their own patients, and attend them, or instruct by letter.

A complete installation of Dowsing's RADIANT HEAT AND LIGHT BATHS.

Bedrooms and corridors are kept at a uniform temperature in winter. Electric Lighting; Hydraulic Lift; Good Cuisine; Bowls, Billiards, Golf Links near. Ready access to Bristol Channel Steamers.

For Prospectus, address A. M. FINCH, Manageress.

TELEGRAMS—"SPA, BRISTOL." TELEPHONE No. 655.

Hot Mineral Springs of Bath,

Daily yield upwards of Half-a-Million Gallons at a Temperature ranging from 117° to 120 Fahr.

THE Natural Mineral Waters of Bath are proved by the record of centuries to be most efficacious in cases of **Rheumatoid Arthritis, Rheumatism, Gout in its various forms, Skin Affections, etc.**

The Corporation of Bath has expended large sums in developing these Baths and adopting every appliance known to modern Balneology. They are now in point of luxury and completeness "**the most perfect in Europe.**"

Scientific application of the waters may be obtained, including the Nauheim or Thermalsoolbäd Treatment, the Aix System of Massage, the "Table" Aix Massage Douche, Electric Water Baths, Electric Mineral Water Douche, and Berthollet or Natural Vapour Baths. Inhalation and Pulerisation Rooms are also provided.

ELECTRIC HOT AIR BATHS (GREVILLE SYSTEM).

Letters to the Baths Manager will receive immediate attention.

BATH IS ONLY TWO HOURS FROM LONDON.

Continental Baths in England.

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Station—
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A WINTER AND SUMMER RESIDENCE
AND A FAMOUS NATURAL MINERAL SPRING
AND A PERFECT BATHING ESTABLISHMENT.

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All Baths directly accessible by Lift without leaving the Hotel.

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FOUR-CELL ELECTRIC BATH; INHALATIONS.
MASSAGE AND SWEDISH EXERCISES; SPECIAL DIETING.
FIRST-CLASS HOTEL IN THE MOST PICTURESQUE PART OF DERBYSHIRE
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CONCERTS BY MILANESE ORCHESTRA TWICE DAILY.

ROYAL HOTEL and BATHS.

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MURTLE (late Heathcot) near ABERDEEN.

THIS Establishment contains every modern condition for health, comfort, and convenience, including Electric Light, Elevator, Heated Corridors, Electric and other Baths, etc.

The Climate of Deeside is the most bracing in Britain.

Terms:

From 1st Nov. till 31st May	- - -	£2 5 6 per week.
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HIGH-CLASS HEALTH AND PLEASURE RESORT
FOR WINTER AND SUMMER.

Nearly 800 feet above Sea Level. Dry, Bracing, and Health-giving. Extensive Grounds commanding charming views.

CROQUET, TENNIS (DRY AND GRASS COURTS), BOWLING, AND PUTTING GREENS. BILLIARDS.

ENTERTAINMENTS all the Year round.

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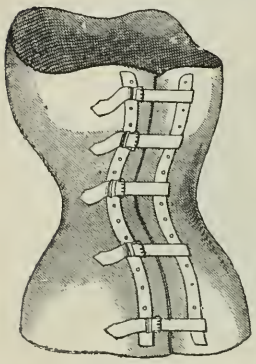
SPECIAL NOTICE:

NEW BATHS in course of construction will be ready for the season, including TURKISH, SWIMMING, RUSSIAN, AIX DOUCHE, and ELECTRIC. The Ladies' and Gentlemen's Baths are respectively under the supervision of a Lady Physician and a Visiting Physician. A thoroughly efficient Staff, including Trained Nurses.

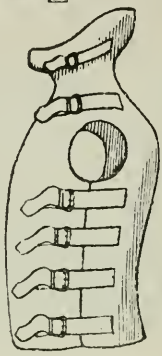
TERMS: 2½ to 3½ GUINEAS WEEKLY.

Write for Illustrated Prospectus - MISS GOODWIN, *Manager.*

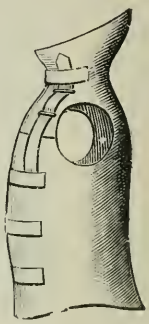
COCKING'S PATENT
Poro-Plastic Jackets and Splints.



JACKET.



CERVICAL JACKET, No. 1.
Designed by
W. J. WALSHAM, F.R.C.S.



CERVICAL JACKET, No. 2.

INSTRUCTIONS FOR MEASUREMENT, Etc.

JACKET. *(In cases of Slight Deformity):*

Circumference at axilla.
,, ,, waist.
,, ,, hips.
Length from axilla to great trochanter.

In severe angular cases, circumference over apex of curve, position of same, and contour should be given; in lateral cases a description of the case.

In all cases it must be stated if for male or female.

CERVICAL JACKETS.

Same measurements and circumference at neck, and length from centre of neck to axilla.

Any part of the Jacket can in the process of manufacture be left soft.

LEG SPLINT.

LEG SPLINT
For all Diseases of the Knee, or Fracture.

Made with soft front or with hinge at back, and foot part if required.

Circumference at top of thigh.	Circumference below knee.
,, above knee.	,, at calf.
,, at knee.	,, at ankle.

Length of Splint as required.
State if for right or left leg.

When the foot part is required, also circumference at heel and instep, and length from centre of knee to ground.

If the limb is contracted the contour should be given.

Jackets, Splints, and Poro-Plastic in Sheets may be had of our Agents.

Sole Manufacturers: **J. T. COCKING, PLYMOUTH.**

HOLLAND'S

Instep Arch

SOCK

"IMPROVED" PATENT.

"MOST VALUABLE FOR **FLAT FOOT,**"

AN EFFICIENT SUPPORT.

which is found amongst all classes of society; especially those whose profession entails continuous standing, or those recovering from severe weakening illness; also amongst children who are growing fast.

Composed of a leather moulded Sole and a combination of Steel Springs.

PRICES—

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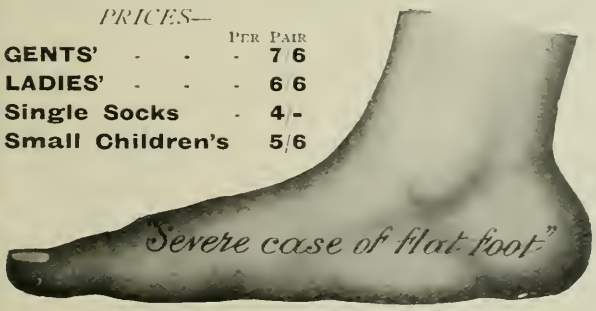
GENTS'	**7 6**
LADIES'	**6 6**
Single Socks	**4 -**
Small Children's	**5/6**



Send a Pencil Outline of the Foot taken when standing as the best guide for size.

Can be had of the leading Surgical Instrument Makers, or direct from

HOLLAND & SON,

46 (late 40), S. Audley St., Grosvenor Sq., LONDON.

W. MONK & CO.,

Original Bath Chair Factory,

BATH.

MAKERS TO
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BATH CHAIRS and SPINAL CARRIAGES.

All kinds at Lowest Prices - - For Sale or Hire.

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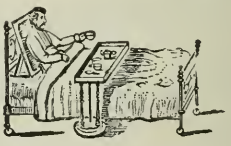

MERLIN CHAIRS, CARRYING CHAIRS, COUCHES, BED-TABLES, BED-RESTS,

And all kinds of Invalid Furniture, For Sale or Hire.

BEST . .
QUALITY.
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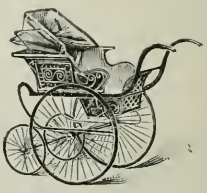
PRICES.



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ABSORBENT COTTON WOOLS,
BANDAGES,
SURGEONS' TOW,
CARBOLIZED TOW,
SPLINT PADDING,
ABSORBENT TISSUE,
(Absorbent Cotton between layers of Gauze),
"IMPERMIETTE," WATERPROOF
AND
"IMPERMIETTE" BED-SHEETING

do not gum up and spoil by keeping, and are not injured by anæsthetics, boiling water, or sterilization. (The improved substitutes for Jaconette and Rubber Sheeting.)

TISSUED ABSORBENT WOOLS.

FIRST FIELD DRESSINGS.

"HEALTH" CHEST PROTECTORS, ETC.

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Messrs. J. DEFRIES & SONS

have prepared a Series of Pamphlets, which they will have pleasure in sending to anyone engaged in Public Health work.

A. "DISINFECTION BY STEAM."
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THE PASTEUR FILTER

The only Filter Awarded Grand Prix, Paris, 1900.

OFFICIAL GOVERNMENT STATEMENT:

"Wherever the Pasteur Filter has been applied Typhoid Fever has disappeared."

Equifex Disinfectors

SATURATED STEAM (PATENT).

Adopted by the Metropolitan Asylums Board, for the Brook Hospital; H.M. War Office, for the ROYAL VICTORIA HOSPITAL, NETLEY, and by the Governments of India, Victoria, New South Wales, etc.; and the recent Disinfection Stations of the Boroughs of Lambeth, Fulham, Battersea, Brighton, etc.

SPRAY DISINFECTORS FOR ROOMS Disinfect with Certainty.

J. DEFRIES & SONS, Ltd.

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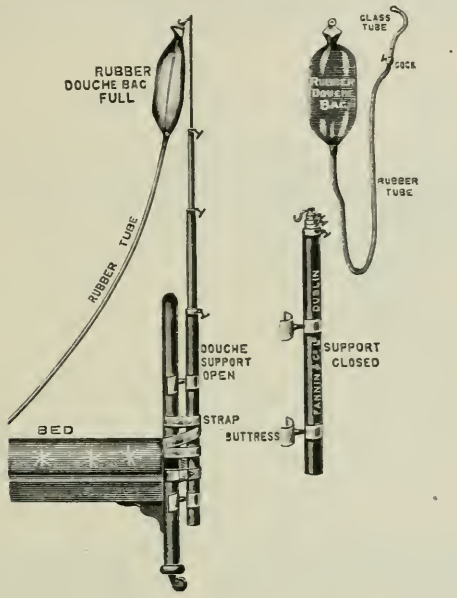
THE 'DUBLIN' DOUCHE STAND

PATENT.

Suggested by Dr. C. B. PASLEY.



Made of Aluminium tubing. Can be fixed to any ordinary bed post or table leg. Suitable for either Rubber Douche Bag (as figured) or Douche Can.

Reservoir adjustable to any height.

Length extended, 4ft. 6in.
Length folded, 17 inches.
Weight, 1¾ lb.

PRICE, Douche Stand only - - 25/-
Rubber Douche Bag and Tube, extra - 5/-

FANNIN & CO., LTD.,

41, Grafton Street, DUBLIN. | *38, Wellington Place, BELFAST.*

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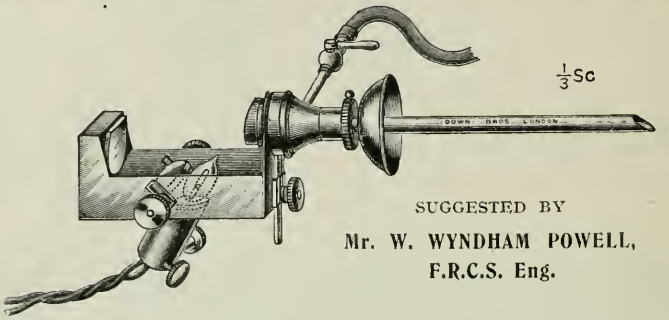
AN IMPROVED
URETHROSCOPE.



SUGGESTED BY
Mr. W. WYNDHAM POWELL,
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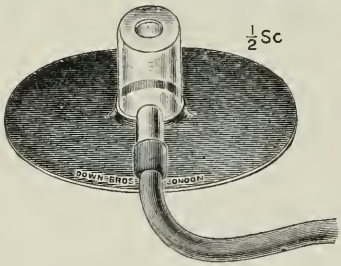
The Illumination is considerably increased by the juxtaposition of a High Candle-power Lamp and a Condensing Lens. The Instrument is more convenient to hold, and is otherwise improved in several points of detail.

Complete with Set of 3 Specula with Pilots - £4 9s. 6d.

THE NEW
SUPRAPUBIC DRESSING.



The only effectual means of ensuring the patient's comfort.

A GREAT ECONOMY IN DRESSINGS.

The Complete Set in Box—
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Full descriptive circular accompanies each Set.

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(Highest Award)
Paris Exhibition, 1900

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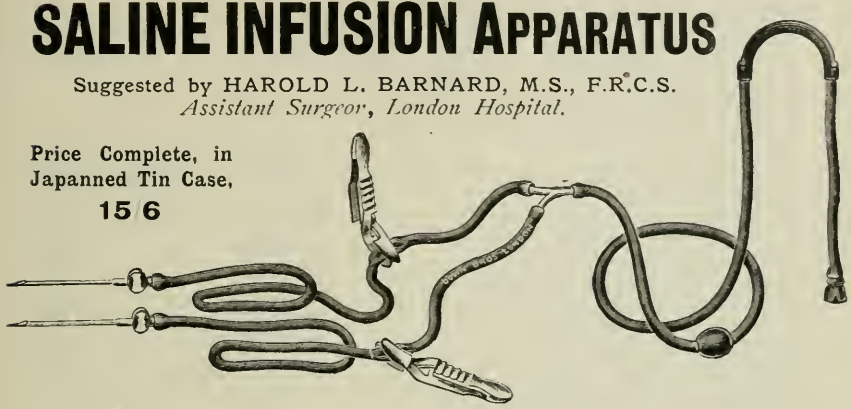
SALINE INFUSION APPARATUS

Suggested by HAROLD L. BARNARD, M.S., F.R.C.S.
Assistant Surgeon, London Hospital.

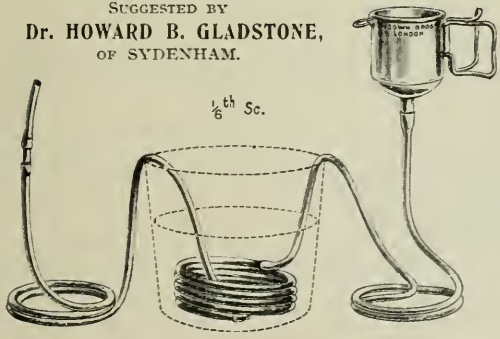
Price Complete, in Japanned Tin Case,
15/6



This Apparatus has been designed for the infusion of large quantities of saline fluid into the cellular tissue of the thighs (both thighs simultaneously) as an adjunct to abdominal drainage in the treatment of cases of general diffuse peritonitis due to appendicitis. It may also be used in case of collapse from any cause, but especially from loss of blood as in post-partum hæmorrhage, or in cases of choleraic diarrhœa, etc., and has been used with success on babies. *Full descriptive pamphlet accompanies each Apparatus.*

APPARATUS FOR
Rapid Preparation of Sterilized Water

SUGGESTED BY
Dr. HOWARD B. GLADSTONE,
OF SYDENHAM.



FOR
DOUCHING PURPOSES, Etc.

Boiling water is poured into the funnel, and is cooled to the desired temperature by passing through the metal coil immersed in cold water.

Price in Metal Box,
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Full descriptive circular accompanies each Apparatus.

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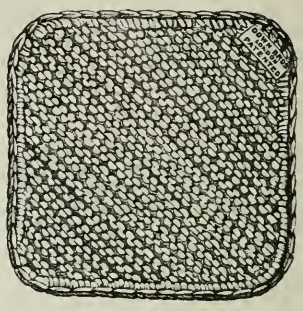
THE SAFE SURGICAL SPONGE

(PATENTED).

The "Sponges" are made of highly absorbent cotton stained with *methylene purple.* From the nature of the material perfect sterilization is possible.

The Sponges, though generally useful for all operations of surgery, will be found especially so in abdominal operations, their distinctive colour and appearance rendering it a practical impossibility for them to be overlooked in the body. Whereas other sponges may become stained to the colour of the blood itself, and thus only with difficulty be distinguishable, *it is a peculiar characteristic of the dye in this case that it turns to a deeper purple when saturated with blood, and always stands out in clear contrast to the tissues.*



IN SIX SIZES—

4 × 4 in.	...	per dozen **7/-**	10 × 10 in.	...	per dozen **16/-**
6 × 6 in.	...	,, **10/-**	12 × 12 in.	...	,, **18/-**
8 × 8 in.	...	,, **14/-**	14 × 14 in.	...	,, **21/-**

THE "CROSSLEY"

POCKET SPITTING FLASK.

This Flask has been made to the suggestion of Dr. Lloyd Smith, of the Manchester Sanatorium, Bowdon, and will be found to overcome the objections to which so many patterns on the market are open.

The Flask is small, of a convenient size and shape for the pocket, is made entirely of dark amber glass, and on to the neck of flask is moulded a bayonet joint to which the cap (of metal, nickel-plated) is readily fitted and as quickly removed.

The Flask will be found exceedingly simple, efficacious, and practical, entirely meeting the requirements essential to perfect sterilization.

Per Dozen ... ... 9s.

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DOWN BROS. Surgical Instrument **LTD.** Manufacturers,

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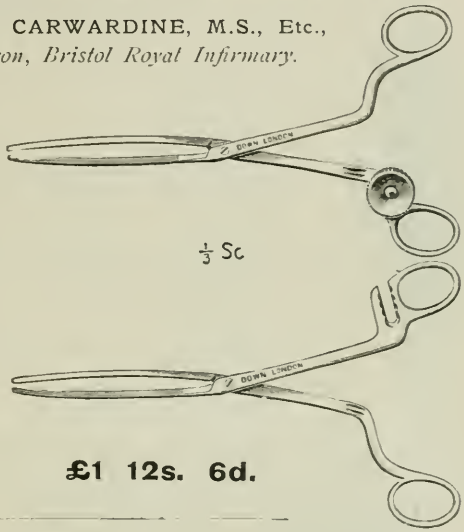
CARWARDINE'S
TWIN INTESTINE FORCEPS.

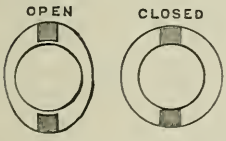
Suggested by Mr. T. CARWARDINE, M.S., Etc.,
Senior Assist. Surgeon, Bristol Royal Infirmary.

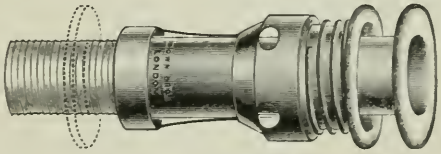
The Forceps being furnished with well tempered spring-arched blades, which are covered by india-rubber tubing when in use, the compressing force is so slight and yielding that the gut is not injured by their application. When the two Forceps are clamped together, they can be conveniently held in one hand, leaving the other hand free.



Per Set ... £1 12s. 6d.

CARWARDINE'S
ENTEROSTOMY TUBE.





Made in 3 Sizes. **Each 21s.**

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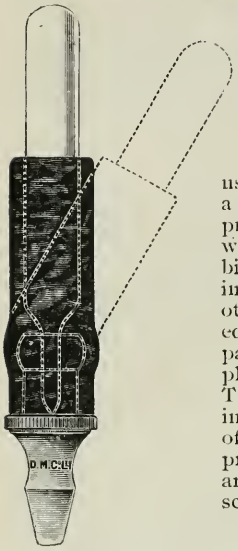
THE . . .
DENTAL MANUFACTURING CO. Ltd.



THE SIMPLE
CAPSULE-BREAKER.

(Patent applied for).

The various volatile anæsthetics, now so largely used in sealed glass Capsules, have created a need for a suitable Capsule-Breaker. Several devices have been put upon the market, but we venture to think nothing will compare with the one here illustrated. It combines the double advantage of great simplicity and inexpensiveness. It will effect all that any of the other Capsule-Breakers on the market will do with equal, if not greater, efficiency, and its cost is comparatively small. The device consists of a nickel plated nozzle attached to a piece of stout Indiarubber Tubing 2 inches long. The method of using is to insert the Capsule in the end of the tube, and break off the nose by simply deflecting the tubing by pressure on the nozzle. The broken pieces of glass are prevented from passing through the nozzle by a screen of fine gauze.

Price ... **3/6** each.

Sole Manufacturers: The DENTAL MANUFACTURING Co. Ld.
6-8-10, LEXINGTON STREET, LONDON, W.

WAITE'S LOCAL ANÆSTHETIC.

40,000 ozs. sold annually to Dentists in the U.K. alone

Speaks to its Efficiency.

IT NEVER FAILS.

It is not a secret remedy.

No surgeon should be without it. For the removal of Hæmorrhoids, Cancerous Glands, Operations on the Eyes, Strangulated Hernia, Goitre, Amputation of Toes and Fingers, and for all minor surgical operations it is invaluable.

That it is the best local Anæsthetic on the market there is abundant proof.

PERFECTLY SAFE and ABSOLUTELY RELIABLE.

The ingredients and instructions for using stated on each bottle.

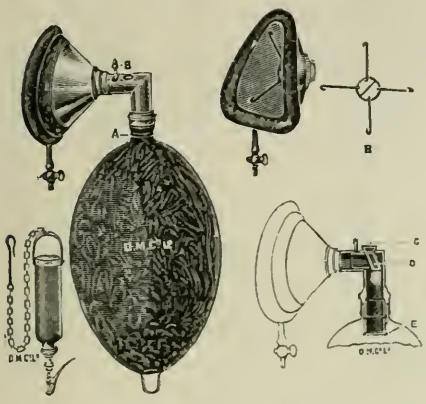
To be obtained of any of the recognized Drug Houses.

Price: 1-oz. bottle, 4s.; 2-ozs., 8s.; 6-ozs., 20s.

A Free Sample, with Literature, upon application to the Sole Wholesale Agents:

The DENTAL MANUFACTURING Co. Ld.
6-8-10, LEXINGTON STREET, LONDON, W.

THE . . .
DENTAL MANUFACTURING CO. Ltd.



THE IDEAL INHALER.
(Patented.)

If its extensive sale is any indication, it may safely be said that the Ideal Inhaler is the most universally used of any on the market.

In its improved form, as illustrated, it has a very wide range of usefulness. Not only may the more volatile Anæsthetics, such as Chloride of Ethyl be administered by it, but it is also suitable for producing prolonged anæsthesia.

Chloride of Ethyl or any similar preparation may be sprayed on the lint cone and employed with advantage for induction, followed by Ether poured through the air-valve on the sponge below. The quantity of air admitted may be regulated by the valve. This method obviously has many advantages over the usual N_2O and Ether sequence.

The best method, and one which causes least inconvenience to the patient, is to spray one-third of the dose on to the lint cone, and after the first or second inspiration close the air valve, then, after the sixth or seventh project the remaining two-thirds into the bag by way of the air valve, which should be closed immediately.

The bag should be reversed and cleansed, and a new cone adjusted to the facepiece after each administration.

The bag shown in Fig. 1 has a great advantage over the ordinary Supplemental Bags in daily use, on the importance of which too much stress cannot be placed, in the fact that this Bag is reversible, which does away with the strong objection—which rightly exists to the use of the ordinary Supplemental Bag, which it is impossible to keep aseptic. The bag supplied with this Inhaler can be turned "inside out" in a second or two, hence what was the inside at one administration becomes the "outside" at the next. To do this is simplicity itself.

PRICE:

Complete, including Celluloid Facepiece with removable Pad, Cone Retainer, 6 Cones, Stopcock, and Sterilizable Reversible Bag - - - - -	£2 5 0
Bottle Holder with Chain and Hook - - -	2 6

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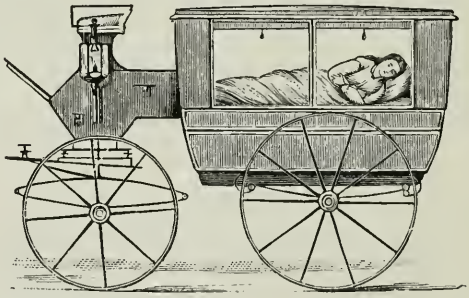

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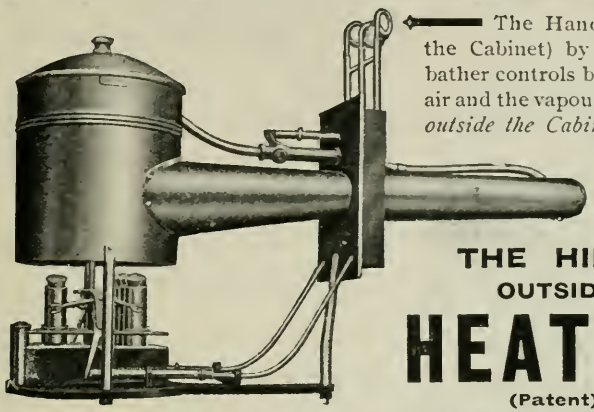

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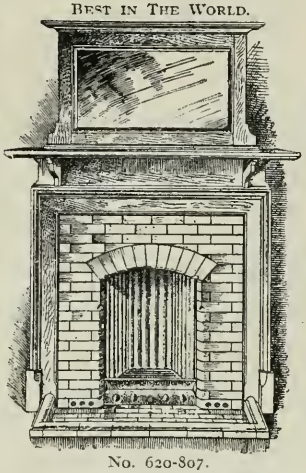

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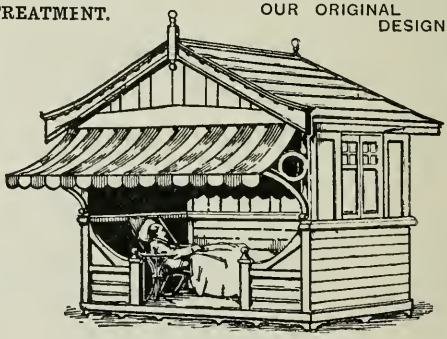

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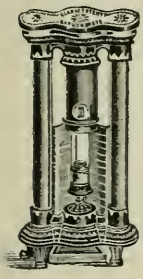

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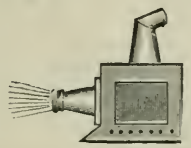

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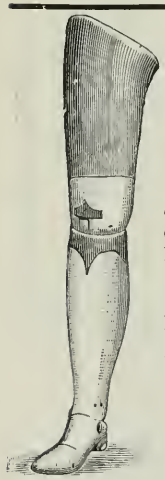

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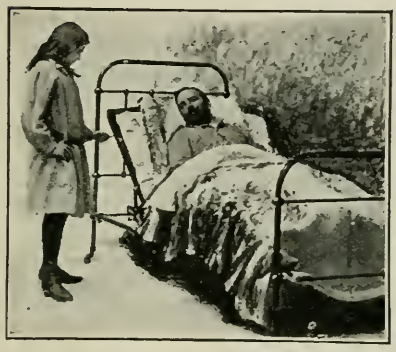

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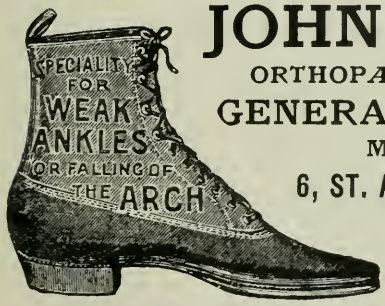

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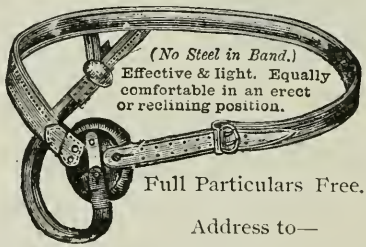

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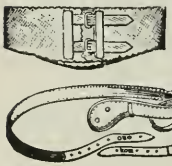

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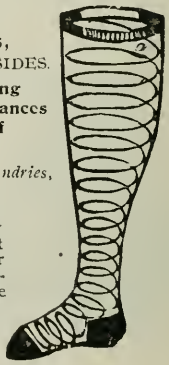

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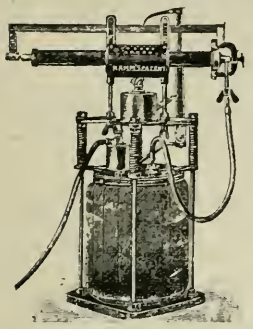

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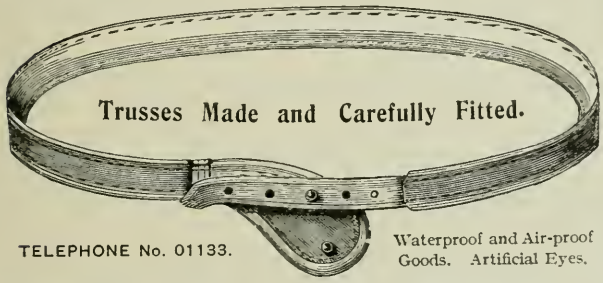

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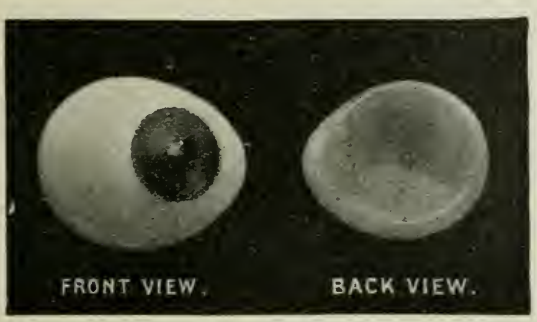

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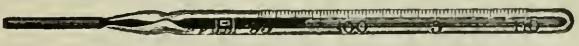

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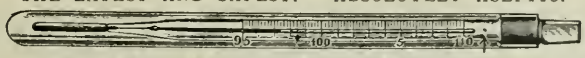

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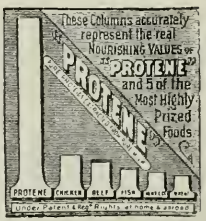

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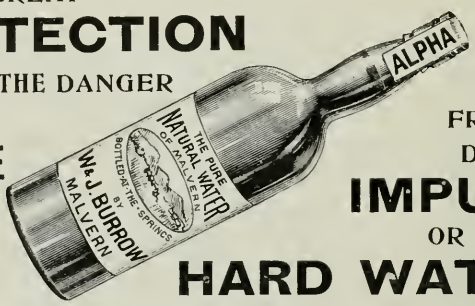

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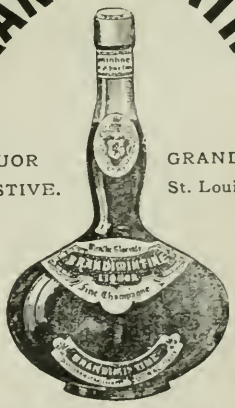

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West London Medical Journal, *April*, 1899.

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	Analysis by S. Archibald Vasey, Esq., F.I.C., F.C.S., Nov., 1904.	Analysis by The Lancet, Nov. 24th, 1894.	Analysis by Dr. Dupré, August, 1883.
BARIUM CHLORIDE	6·49	6·49	6·26
SODIUM CHLORIDE	186·20	185·90	189·56
CALCIUM CHLORIDE	86·24	85·47	84·56
CALCIUM CARBONATE	6·30	6·30	2·80
MAGNESIUM CHLORIDE	21·70	20·31	24·31
AMMONIUM CHLORIDE	0·15	0·26	—
SILICA	1·12	3·10	1·40
LITHIUM CHLORIDE	traces	0·91	traces
BROMINE	traces	traces	traces
Total saline constituents in grains per gallon ..	308·20	308·74	308·89

* Omitted in LANCET Analysis.

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LLANGAMMARCH BARIUM WATERS *in Heart Disease.*
See THE LANCET, *Nov. 24th, Dec. 1st, 1894; Jan. 4th, 1896.*

LLANGAMMARCH BARIUM WATERS *in Glandular Enlargement.*
(A London Physician.)

LLANGAMMARCH BARIUM WATERS *in Kidney Complaints, Gout, and Rheumatism.*
See Clinical Note in THE LANCET, *March 25th, 1899.*

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LLANGAMMARCH BARIUM WATERS See BRIT. MED. JOURN., *Oct. 24th, 1903.*

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Equal to proof spirit	14·81	11·89	**7·80**
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